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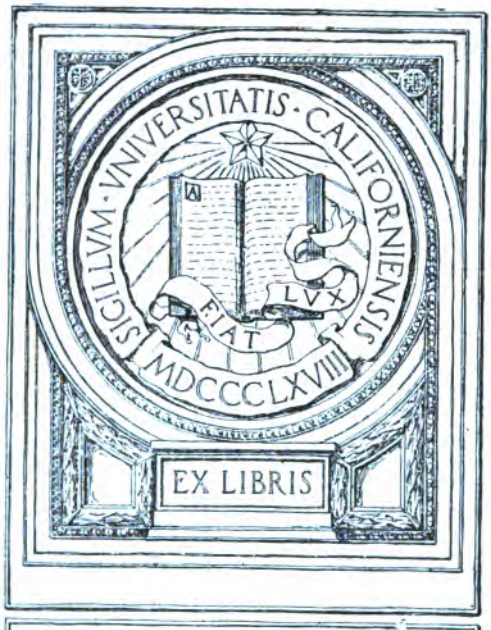
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LESSON PLANS

IN

ENGLISH, ARITHMETIC AND GEOGRAPHY,

FOR

GRADES FOURTH TO EIGHTH

Edited by

ALICE CYNTHIA KING HALL

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PREFACE

These lesson plans were originally prepared as a part of regular class work in courses given by Professor Hall, Professor Mead and the Editor in the College for Teachers of the University of Cincinnati and in summer courses in Teachers' College, Columbia University. They have been published from time to time in the Atlantic Educational Journal with many others from the same courses. These few have been selected to put in more permanent form with the thought that they may be of direct assistance to teachers and to those preparing to teach.

Two ideas have determined the presentation of these plans and the slight changes that have been made in them. First, that definite planning of specific lessons is a prerequisite of good teaching. Leaving the preparation to the inspiration of the moment, with the class before the teacher, rarely, if ever, means suitable material, good organization of ideas, or good questioning. Elaborate lesson plans, on the other hand, with a multiplicity of aims (which are frequently not thought of again in the lesson), with detailed subject matter and large and small questions in parallel columns, with the Five Formal Steps, or any other formal written procedure, while it has a value as a step in the training of teachers, is not practical for regular use in the class-room.

Between such preparation and none at all the accompanying plans indicate a mediate procedure. A good lesson would seem to require:—

1. A large problem or aim, as—"To find out whether it is cheaper for a certain family to pay survey rates or meter rates (for water) for a year." "How a shepherd boy became a king," or "To get the atmosphere of India."

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2. Collection of all material at the teacher's command bearing on the subject, with a list of references, if for upper grade pupils, as in the plan on the oyster industry.

3. Selection from this material of the points that solve the problem.

4. Organization of these points into a natural or teaching order, and division into smaller problems as in the series on Building and Loan Associations—"Let us devise a system by which we can save money to build our homes;" "Let us try to work out a plan to accommodate new members"; etc.

5. Wording of large questions which lead to the solution of the problem.

A teacher, having made such preparation, goes to her class with a card or a page of a plan book on which she has written the problem of the lesson with perhaps a half-dozen thought questions as sub-heads.

All this of course takes time, but if the working hours of one Saturday were spent in getting together the material, selecting and organizing, and planning questions for a series similar to that suggested by the Australian plan or the plan on dramatization, the work in geography or composition will be ready, not only for several days, but, in the main, for succeeding years, modified of course by changing facts and the way in which the class reacts to the original plan.

The other idea in presenting these plans is to help teachers to break away from the mere memorization of facts and hearing lessons and to substitute real teaching—to guide children to use their experience and knowledge in growing into new and wider experience and knowledge; to guide them in considering, judging, thinking about and discussing the life around them so that their reactions may be intelligent; to guide their growth in interests and appreciations

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ENGLISH

INTRODUCTION

READING

The main purpose in a reading literature lesson is to make the children like it and want more of the same kind. This aim determines each step in the first plan presented. The teacher's reading the poem aloud gives the pupils the whole story, the feeling and atmosphere, a good start. They are then ready to study it for a fuller meaning and liking. This study is directed by the teacher's questions,—questions which will lead them to read each part silently and to think through the main points in the poem. Every question demands thinking as well as reading. It cannot be answered directly and unthinkingly in the words of the text. The few questions on word meanings are worthy of attention. The words are discussed as they are needed in connection with the silent reading. The teacher does not ask "What does 'instinctive' mean?" but a question which involves its meaning in the context. Again the pupils are asked to select words which help to make a vivid picture or the most important words. In this way they get not only meanings and uses of words but a beginning of an appreciation of one of the elements of Browning's power. After this study it is fairly assumed that the children will think this poem is worthy of reading aloud, that another class would like to hear one of their number interpret it; and so they are ready to work on the oral reading with a definite normal purpose.

Miss Drake's silent reading lesson follows the same general principle. The subject matter of this is such that there is no particular reason why it should be read aloud to anyone, except as some passages are read during the discussion

to confirm or contest some point. It does lead, however, to private study of related reading by individual members of the class, in preparation for reading the new material aloud to the others. This also is a normal reason for reading aloud.

The purpose of reading "Horatius" is to supplement history through the ringing, martial appeal of the poem. This is gained largely through the ear and voice, and so should be an oral reading lesson. But here, as in the others, the oral interpretation is preceded by silent reading and discussion of each stanza.

The aim in ".007" was not alone to interest the class in the story, but also to study the author's skill in securing such interest. Although the teacher does discuss some general terms, she keeps it always in the concrete and always centered around Kipling's story.

STORIES AND COMPOSITION.

In each of the three story plans the teacher is teaching stories rather than telling them. She helps her pupils to build up the story themselves through giving certain facts or situations in the story; then asking questions based upon these facts and the experience of the pupils, the answers to which carry on the story to some new situation which she tells.

The children are helped in the "Kingdom Torn Asunder" to think through the main points of the story in so far as their knowledge and experience enables them to do, then read it to confirm their conclusions. This reading, as also in the long quotations in the story of David, gives familiarity with the beautiful wording and phrasing of the Bible text.

Both the composition plans call for oral composition. One is entirely oral; the other calls for an oral class discussion preceeding each written assignment. This is as it should be.

READING

Robert Browning's "Tray"

Mary Knappenberger.

I will read you Robert Browning's story of a dog, "Tray." Teacher reads the poem slowly with pauses after the main thoughts.

"A beggar-child . . .
Sat on a quay's edge: like a bird
Sang to herself at careless play,
And fell into the stream."
. . . "Dismay!
'Help, you standers-by!' None stirred.
By-standers reason, think of wives
And children ere they risk their lives."
"Over the balustrade has bounced
A mere instinctive dog, and pounced
Plumb on the prize. 'How well he dives!
Up he comes with the child, see, tight
In mouth, alive, too, clutched from quite
A depth of ten feet—twelve, I bet!
Good dog!'"
. . "'What off again! There's yet
Another child to save? All right!
How strange we saw no other fall!
It's instinct in the animal.
Good dog! But he's a long while under:
If he got drowned I should not wonder—
Strong current, that against the wall!
Here he comes, holds in mouth this time
—What may the thing be? Well, that's prime!
Now, did you ever? Reason reigns
In man alone, since all Tray's pains
Have fished—the child's doll from the slime!'"

Let us find this story in our books and study it together. What is the first picture called to your mind? (Child asks the meaning of "quay" and is told by another child.) What are the feelings of this little girl?

How does the picture change? Who comes upon the scene? Who is talking? Why not the child? Why not the people? It was the voice of their hearts speaking to them. Why didn't they answer the call? Were they right in doing this? Let it be talked over but force no decision. Who breaks into the scene? (Child asks for "balustrade".) Why is he called "a mere instinctive dog"? What does it say the men did? Why did not the dog hesitate? What words helped to make that a clear picture? What does the crowd see? What do you consider the most important word in those lines? ("Alive.") How will the people treat the dog?

But what is the dog doing? What does the crowd say to this? What are their feelings? Why are the people restless? What will they do? What does someone shout? How will the people act now? What say to each other? Describe the closing picture.

I think the second grade would be interested to hear this story read. What points must we make clear to them? Beggar child; happy; fell in water; no man stirred; dog dived; child alive; dog dived again; brings up doll. Let us try to read and bring out these points.

Children read aloud thought by thought with criticisms from classmates for good points, and those to be improved. Class chooses reader, who reads entire selection for approval. When satisfactory read to Grade II during story hour.

Silent Reading

Flora E. Drake.

In most of our public schools the children are asked to purchase a reader. The children usually read the selections therein together. Quite often the work is merely oral reading with little attention paid to the thought. This lesson is planned not only to lead children to get the thought of the story itself but to interest them in other literature on the same subject.

MATERIALS: Story of "The Three Giants," in Heath's *Fourth Reader*.—Each child is supplied with a book. Related stories in supplementary readers:

Ulysses and The Bag of Winds.
The Argonauts.
James Watt and the Teakettle.
Robert Fulton.
Poems:
The Wind in a Frolic.—*Wm. Howitt.*
The Brook.—*Tennyson.*
The Brook Song.—*James Whitcomb Riley.*
The Sea.—*Barry Cornwall.*
The Miller of the River Dee.

Open your books to page 18. What are we going to read about? Are there giants today? Children discuss the question, bringing out the meaning of the term giants. They will probably agree that giants do not exist.

Read silently until you can tell why Frank wished there were real giants. In a few moments a child will be ready. Other children will be interested to supply any reason the first child omitted. What brought the mother into the conversation? (Silent reading.) The mother describes three giants. Read the description of the first and decide what

name you might give that would differ from the one given by the mother. How does the second giant differ from the first? (Silent reading and discussion.) Why is Dick Silverline an appropriate name for him? Have you a better one to suggest?

How does the son, the third giant, differ from his father? In the discussion following the children will bring out his idle, lazy youth; difficulty man had in putting him to work; his work. Have you a better name to suggest than the one given?

Why may we call the wind, water, and steam giants? There are many more things these giants do than Miss Child mentions. Here is a story of the wind written in beautiful English. Would someone like to read this and tell us tomorrow what it does to create a commotion in every place? Give out the poem. Several copies should be at hand in case several desire it. The teacher reads:—

> "The wind in a frolic, sprang up from sleep
> Saying, 'Now for a frolic! Now for a leap!
> Now for a madcap galloping chase!
> I'll make commotion in every place:' "

Here is a story of a bag of winds. Who wishes to read this and report? Someone put the lazy son to work you remember. Here are stories of how it was done. (James Watt and Robert Fulton.) Tennyson has a beautiful poem about a young Dick Silverline. Some child may like to learn it. Riley sings of another little brook. (Gives out Riley's Brook Song.) In a similar way the teacher gives out the other poems.

Tomorrow we shall each know something more about these giants and may hear also what others have found out.

"Horatius at the Bridge," Macaulay

Bertha E. Ward.

OBJECT OF TEACHER.—To make the class feel the situation so keenly that the selection will be read with expression without much formal drill. The first ten stanzas were taken, not because that is the best division of the poem, but because the teacher cannot cover much more than that in any lesson period. Moreover, the story being familiar from the previous history lesson, the interest of the class will lie in the ringing poetic recital of events rather than in curiosity as to the outcome, so that the place of the break is not of much importance.

PROCEDURE.—Just what danger threatens Rome? In today's lesson we shall see how a poet has told the story of Horatius' bravery, and we shall try to read his poem as he intended us to read it. Just where were the Etruscans approaching Rome? Indicate their position on map as in the previous lesson. Who is to lead the Romans against them? Why does not the *consul* feel prepared to meet the enemy? How does he feel then? How does the poet tell us the consul felt? Read silently first four lines. Where were the Romans gathered? Before the wall outside the city. What do you suppose the consul is thinking as he looks first at the wall and then at the foe? Let one or two pupils answer this: Teacher reads first stanza. What does van mean? Try to get meaning from context. How do you suppose the consul said those last words? We can't shout them when we read, but we can read them as if we felt every word.

Allow some of the best oral readers to try this part aloud.

Who answered the question of the consul? What do we know of Horatius? What was his plan? Do you suppose

he felt sure of succeeding? Had he thought of failing? Why was he willing to try it then? That is what we call "facing fearful odds" when a man attempts a thing so full of danger. Leonidas "faced fearful odds" at Thermopylæ. In what other way was Horatius like Leonidas? They each stood with a few in a narrow path where the enemy could be held back. That is what we mean by "holding the foe in play."

Teacher reads Horatius' speech (2 and 3). What gesture did Horatius make when he said "In yon strait path a thousand, etc."? What does strait mean? Where would he look when he says: "Now who will stand on either hand, etc."? How would Horatius say these words, "To every man upon this earth, death cometh soon or late, etc."? Who thinks he can read Horatius' speech?

Now let us look over the next stanza and find who came forward to help them. We know there were two [write names on board and pronounce with the class.] What did Lartius say? Allow some one to read his words alone. And now Herminius? Read his speech. Why do we put in the words, "A Ramnian proud was he"? To explain who he was. Let me read it and see if my voice told that I was explaining something. How would the consul feel when he hears this brave offer? Let us see what he says. Read next four lines silently. What does quoth mean? dauntless?

Now let us make a picture in our minds of that great advancing army. What would you see? Why could you not see the men's faces? Helmets, shields, spears, etc. How does it look in the noonday sun? Let me read how the poem describes the sight, "a broad sea of gold."

Read silently first five lines of stanza 6. Explain the word "surges." What would Horatius hear as he stands there? How do you see the host advancing? What are they carrying? Ensign. Read the stanza aloud.

Read through silently stanza 7. What do you suppose the "dauntless three" are thinking as they stand there waiting? What would the Tuscans think when they see three men against them? What sound would they hear? How did the three Tuscans advance? Read the stanza aloud.

In the next we have the names of these three chiefs and something about where each one came from. Why do you suppose the poet told us so much about them? I think it was because those hard-looking names that we have here sound so pretty when they are read well, so we must learn to pronounce them. Pronounce proper names carefully with class. Teacher read over stanza aloud and call for it from the members of the class.

Read over the next stanza silently and find what happened in the fight. After answers on this, have it read, first pronouncing proper names. How did the Tuscans feel when they saw their brave soldiers overthrown? What sound was heard? What is a "wrathful clamor?" What did the Tuscans do when they saw their repulse? "Six spears' length from the entrance halted their mighty mass."

Let us see just what the situation is. Just over the bridge six spears' lengths away" is halted the great Tuscan army. Horatius and his two brave companions stand on the bridge waiting for others to come against them, but no man dares. In our next lesson we shall read how another came forward, only to meet defeat.

".007," Kipling

Madaline La Rue Maury.

The following lesson was taught to a combined C and D High School English class as one of the first lessons in the year's work in literature. The course for the year was based on the story in its various forms: The short story, Irving,

Hawthorne, Poe; the long story or novel, Quentin Durward; the ballad, *Popular English and Scottish Ballads;* the short epic, *Sohrab and Rustum;* the long epic. *Ulysses Among the Phaeacians;* the drama, *Merchant of Venice* and *Julius Caesar*.. I selected ".007" to begin with because of its interest, because it is present-day and modern, and because it exemplifies in a marked degree the characteristics of a good short story.

This year we are studying narration. Let us see what constitutes a good short story.

When you hear of a new story what do you always want to know to help you to determine whether or not you want to read it? Would all find the same story interesting? We would want to know what it is about, what *kind* of a story it is. What kind is the story of *Columbus? Evangeline? Miles Standish? The Spy? The Pilot? Ivanhoe? Kenilworth?* Name some of the stories you have read, and tell what kind each one is. Thus develop idea of *nature* and *characteristics* of stories, dividing them into stories of adventure, biography, history, travel, love, social and domestic relations.

I shall read aloud to the class the story of a locomotive, ".007," by Kipling. Why do you suppose Kipling wrote about a locomotive? Let us see if we can find out. As you listen to ".007" determine what are the nature and characteristics of this story, and see *how* Kipling makes it interesting.

Put on the board the following: Nature? Characteristics? Interesting—why? What makes it interesting?

Teacher reads story aloud to class.

As she reads calls attention to very effective words or phrases, such as ".007 put both drivers and his pilot into it." ".007 pushed out gingerly, his heart in his headlight"; "now deep down in his firebox .007 had cherished a hope —"; "he nearly blew up with surprise," etc.

Judging by the responsive attitude of the class that they like it, ask: What makes the story interesting? From the general class discussion note these points especially: The story is novel, unusual; there is very vivid portrayal of character; the engines talk like people; the incidents are exciting; you are made to feel with and feel for the engines; they arouse your sympathy and interest and call forth your more worthy feelings; .007 is made a *real* hero; you see and appreciate the triumph of modesty and worth and reward for merit.

In the discussion of the vivid portrayal of the characters, note the different individualities of the engines and their salient characteristics. Which engine are you like? This question need not be answered in class.

Where in the story was the highest point of interest? There will probably be difference of opinion, some thinking the wreck and rescue by .007, and others the conclusion, where the White Moth goes south, "with her seven vestibuled cream-white cars," covering 156 miles in 221 minutes. Where was the climax—the point upon which everything turned? Where .007 rescued the Mogul. What were the points which led up to the climax? Have story briefly told that far. What do you hear about first? Who? Where? When? What next? The dialogue in the roundhouse. What is the reason for this dialogue? It introduces the other characters. What effect has it? Gives local color, atmosphere; brings out nature and characteristics of all the engines, and makes them seem like real people. What are some of the most telling touches here? The Compound's use of French; Poney's slang and good nature; the Mogul's overbearing "Costly—perishable — fragile — immediate — that's me!"

Then there is a change in the scene. How would you characterize this part? The engines go off to work—.007's

work. What were his feelings? How did he like it? How does this lead up to the climax? How does the climax bring out the characters of both .007 and the Mogul? Kipling does not tell you all this, how do you know it? Here Kipling shows one of the greatest arts in story-telling, viz., the power of suggestion, of stimulating the imagination.

What is the conclusion of the story after the climax? Compare its length with what precedes. Why is it effective?

What then are the main parts of this story? Introduction, important details leading up to the climax, climax, conclusion. These are applicable to any short story.

Why is ".007" a good title? It is unusual and arouses curiosity. Show that everything in the story has a direct bearing on the subject. (Unity) Give examples. What would be the advantage or disadvantage of either leaving out any of the details or of putting in other details? Show that the characters are well-drawn, vivid, interesting. Which character was drawn best? Why? What made it so? How does the dialogue help the story? What do you think about the language? Why did Kipling use so much slang? Select expressions which give color, atmosphere, life.

What makes it such a good story? Now why do you suppose Kipling wrote about a locomotive? What kind of an effect does he produce?

What seem to be the parts which make up a good story? We shall watch for these as we read other stories; also keep them in mind as we ourselves try to write.

STORIES

The Kingdom Torn Asunder.

Amy J. DeMay.

AIM: In the lessons we have just been studying who was king of Israel? Solomon. Let us see what happened to the kingdom after Solomon's death.

When a king dies who is usually king in his place? This was Rehoboam, who became king after his father's death. When the new king came to the throne what do you think the people wanted to know? What kind of a king he was going to be. What might a bad king do? What would a good king do?

You remember that Solomon was a very rich king; where did he get all his wealth? Gifts, taxation. Who paid the taxes? When would the people not mind paying taxes to support the king? When might they object? What would be the first thing they would think of with a new king? What would they do? So a company of their leaders went to Rehoboam and asked him to make their burdens of taxation lighter. What might King Rehoboam answer?

He asked them to wait three days while he thought the matter over. Why was this a wise plan? What might he do besides thinking about it? Whom should he consult? He consulted the old men—counselors of his father—first. Why should they be able to help him to decide wisely? What do you think they would advise? He then consulted the "young men that were grown up with him." What might they advise? Why do you think he took the advice of the young men?

How might the people take the decision when they heard it? What action might they take? Some of them set up a separate kingdom. (Read together 1 Kings, 6:6-16.)

How a Shepherd Boy Became a King.

Clara M. Van Hart.

AIM: To learn how a shepherd boy became a king. Why would this be strange? The boy's name was David. He lived a long time ago in a little town far away from here—Bethlehem. David's father, Jesse, had seven other sons; but David was the youngest. They called him "David" because that word meant "Darling" in their language. David's father was an old man. He owned many sheep, and the pastures for them out on the hillsides and in the pretty valleys. Here the grass was fresh and green and there were little brooks and pools. In some places there were trees and flowers. The sheep liked to feed on the short green grass of the hillsides.

What do you suppose David could do to help his father? How could he take care of the sheep? David didn't go to school. Where might he learn new things? What might he see around him? What could he learn about them? Learn about his sheep: how to care for them and keep wild animals away. Of what use is the shepherd's crook? How might David keep wild animals away? Too early for guns; he had no bow and arrow. Using a sling. What would he use in the sling? Where would he get the stones? What do you suppose David did in part of his spare time? Practiced with his sling and looked for good stones to have them ready when he needed them. If David gathered stones, where might he keep them? David always had his loose shepherd's coat, his crook or staff, his bag and sling. Use pictures. Sometimes David wandered far away from home. I wonder why? To find new pastures. Sometimes he couldn't get back at night and had to spend the night out-of-doors with his sheep.

One night David and his flock were out,—far away from the village. Everything around was quiet. The sheep were lying all around him, resting peacefully, when suddenly there was a growling noise and David knew that there was a wild animal in among his flock. What would David do? Kill the bear. Everything grew quiet again and after resting several hours the sheep seemed disturbed. David was wide awake. Suddenly there was a great roar and another wild animal sprang into the midst of the fold and seized a little lamb in its mouth. What must David do? A single stone did not kill the lion. What would the lion do? What must David do? Shoot again and again. David shot several times: then he went up to the lion and took the little lamb away. I suppose he spent much of the rest of the night caring for that bruised lamb.

When David went out into the pastures with his sheep, why do you suppose he had no companions? The shepherds could not keep their flocks together: not enough grass for so many. How might David pass his time? Making reed pipes and singing. Of what did he sing?

We still have some of the songs David sang. Read the twenty-third,—or some other appropriate psalm of those attributed to David.

As David grew older his nation—the Israelites—had more and more trouble with the other nations around them. They were always fighting. Their king, Saul, worried about his kingdom very much. Sometimes David went to him and played the harp and sang for him. Now it happened that the Israelites were having a war with the Philistines, a nation near them. The king called for men to go and fight.

Who *had* to go? The king. Who might go? David's father was too old: some of his brothers might go. Would

it have seemed wise for David to go? Why do you suppose his father kept him at home. David was his youngest son. He needed a shepherd. Then, what *must* David do?

What does any army need? Where would the Israelites get their food? There was a scarcity of food; the army was having a famine, David and his father heard. What could they do? Whom else would they remember, besides the brothers? What would David's father say to him? Read "Take now for thy brethren an ephah [or measure] of this parched corn, and these ten loaves, and run to the camp to thy brethren; and carry these ten cheeses to the captain of their thousand, and look how thy brethren fare and take their pledge"—i. e., bring me a token from them that they are well." How would David carry these things? How would he make his journey?

As David came to the camp what do you suppose he saw there? There were two mountains with the tents of a camp on each, and soldiers fighting in the valley below. What would he do with his gifts? He left them with the keeper of the baggage. Then what would he do? "Ran into the midst of the army and saluted his brethren." As he was talking to them a strange thing happened. The battle was over and each army withdrew to its own mountain. Read: "And the Philistines stood on a mountain on the one side: and Israel stood on a mountain on the other side and there was a valley between them. And there went out a champion, out of the camp of the Philistines, named Goliath, whose height was six cubits and a span. And he had a helmet of brass upon his head, and he was armed with a coat of mail. And he had greaves of brass upon his legs, and a target of brass between his shoulders. And the staff of his spear was like a weaver's beam. And one bearing a shield went before him. . . . He cried unto the armies of

Israel, . . . 'Choose you a man for you and let him come down to me. If he be able to kill me, then we will be your servants: but if I prevail against him, then shall ye be our servants and serve.' ". David was very much surprised to hear this. He wondered why nobody answered. Why do you suppose nobody answered Goliath? What do you suppose Saul, the king, thought about this? What might he do in order to get somebody to want to try to fight with Goliath? Saul offered to enrich him with great riches, to give him his daughter, and to make his father's house free in Israel.

When David heard all this he wished to fight Goliath. What would his brothers say about it? Others standing around? Some went to tell the king. What would the king do? When the young lad David was brought before him what would he say? What might David tell him to prove that he should be allowed to try? The king consented and gave David a suit of armor, a shield and a sword. How do you suppose David liked this? What was David accustomed to use? Then what would he like best to have with him. His staff, bag, and sling.

David went out to meet the giant, Goliath. His bag was empty. What did he need? He stopped to pick up a few smooth, round pebbles. How would the Philistine act when he saw the boy David coming to meet him? When he saw that David was in earnest, what do you think he would say? How do you think David would answer him? Read: "And the Philistine said unto David, 'Am I a dog that thou cometh to meet me with staves?' And the Philistine cursed David by his gods. And the Philistine said unto David, 'Come to me, and I will give thy flesh unto the fowls of the air, and to the beasts of the fields.' Then said David to the Philistine, 'Thou comest to meet me with a sword and with a spear and

with a shield; but I come to thee in the name of the Lord of hosts, the God of the armies of Israel, whom thou hast defied. This day will the Lord deliver thee unto my hand. I will smite thee and take thine head from thee. I will give the dead bodies of the hosts of the Philistines this day unto the fowls of the air and the wild beasts of the earth: that all the earth may know that there is a God in Israel." What would the giant do? What would David do? David hastened and ran toward the army to meet the Philistine. David put his hand in his bag, and took thence a stone and slang it, and smote the Philistine in the forehead, that the stone sunk into his forehead: and he fell with his face to the earth." Do you suppose that David's work was finished? What more could he do? Read: "Therefore David ran, and stood upon the Philistine, and took his sword and . . . slew him and cut off his head therewith." What would the Philistines do when they saw their leader fall? The Israelites? What must David do before he can claim his reward. In proof he took the head of the slain giant to the king. What then would the king do? How could the people of Israel show their feeling for David? They sang:—

Saul hath slain his thousands,
And David his ten-thousands.

over and over again.

Later there was another battle in which both the king, Saul, and his son, Jonathan, were slain. Whom do you suppose the people chose for their next king?

Theseus

Maude M. Davis.

How Theseus' life was saved by his father's sword, and how he in turn saved other lives.

1. How Theseus found the sword.

When King Aegeus went to live at Athens, he left his sword and sandals under a great rock. These, his son Theseus was to bring to Athens when he was old enough to move the rock.

What would Theseus ask as soon as he could talk? About his father. How soon would his mother tell him about the rock? What would she promise him when he could move the rock? How much would she tell him? If he knew there was a surprise when he could move the rock, what would he do? Why would his mother wish it to be a long time?

How could the lessons that Greek boys have help Theseus to move the rock? What would Theseus do when he found the rock was so large he could not move it? How old would Theseus probably be when he could move the rock? What sort of a rock would this have to be to keep a sword and a pair of sandals in good condition so many years? What would Theseus want to do as soon as he found the sword and sandals? Why would his mother want him to wait a few days? If he stayed two or three days what would he do in that time? What would he tell his young friends about his journey? What kind of adventure would he like?

Theseus could get to Athens by land or by water. Which way do you think would be better? Why? His grandfather told him to go by water. Can you tell why? Why would Theseus decide to go by land?

Theseus had many adventures. Some books give ten and some give only six. Some day we will study about them.

II. How the sword saves Theseus' life.

The people of Athens heard about these adventures of Theseus. There were about fifty of his cousins watching for him at the city gates. Why would these cousins hate to have Theseus at the King's court? What difference would it

make to them to have the son of the King come? They would not dare to kill Theseus. How would they prevent the King knowing of his son's arrival? Who can think of another way? How would it benefit them if Theseus was out of the way.

Now the King had not seen Theseus since he grew up and he would think Theseus a stranger. How could the cousins frighten the King about this stranger? What would they do with Theseus while they went in and told the King about this stranger?

The King sat on his throne. At his right hand sat a wicked sorceress, named Medea. She had a son named Medus. What would she want the King to promise for her son?

When Medea heard the story the cousins told of a stranger who had come to kill the King, what would she advise the king? What would be a good plan to get rid of Theseus? Why wouldn't the king want to kill him? What easy way might the witch plan to kill him quickly and quietly?

She had some magic power. How could she get him to take this? What could they offer him when he came in to the King's presence?

How would Theseus act when he first saw his father? Why would Theseus wait for his father to recognize him?

As Theseus took the glass of wine in his hand, there was only one thing that would save his life. What was it? How is the King to know it is his son? Just as Theseus raised the wine to his lips something happened. What was it the King saw? Then what would the King ask Theseus? What would Theseus say? What would the King say? What would Medea do? How could a witch get away quickly? She called her chariot drawn by hissing snakes. What would she carry with her? When the King and all the peo-

ple heard the hissing snakes what would they do? When Medea saw the king put his head out the window how would she act? She shook both fists at him so hard that she lost a great many of the pearls, diamonds, emeralds and rubies she was stealing. What would the people do? What would the King say when they brought the jewels to him?

In our next lesson we will find out how Theseus kills the Minotaur and saves his father's people.

COMPOSITION

Story Telling.

Ethel Sanders.

The aim of the following lesson was to aid children in telling stories in a clear, interesting way. The second-grade teacher sent two boys, one a good story teller and the other a poor one, to the eighth grade room to tell "The Three Bears." The older pupils were entertained by the stories, and the exercise served as an introduction to our discussion on story-telling.

Which boy told the better story? What was the trouble with the other? "It was too mixed up." You could not follow the story." "There was no point to it." How can one make a story plain to one's hearers? There were various answers to this question but many of the pupils agreed that the story teller must have the story definitely arranged in his own mind.

Let us see how this can be accomplished. What was the point of greatest interest in the "Three Bears? What is the point of greatest interest in "Treasure Island?" in "The Christmas Carol"? in "Rip Van Winkle"? Here the pupils began to appreciate the idea of climax so that word was explained and used.

How many pages are there in Rip Van Winkle before the climax? After the climax? In the other stories men-

tioned is the climax nearer the beginning or the end? Into what three parts might these stories be divided? The events leading up to the climax; the climax; the subsequent events. What difference does it make as to the order in which you tell the events? This introduced the idea of proper sequence of events.

Are all the characters in "Sleepy Hollow" equally important? In telling a story how can it be shown that some characters are important and others unimportant. Why is it necessary to describe the character of Rip Van Winkle? What characters in "Sleepy Hollow" must be described? Which are merely mentioned?

Why could not the story of "Rip Van Winkle" have taken place today? What must we know of "The Legend of Sleepy Hollow" to understand the plot? In telling a story how much of the setting should you mention?

What then are the points of a story which one must think about in order to tell the story well?

Climax of the story.

Events in order leading up to it.

Events after the climax.

The important characters which must be described.

The unimportant characters to be mentioned.

The setting necessary to understand the plot.

As a test of the effectiveness of the lesson the children read the story "Pandora" with a view to telling it later. After the reading, the important points in the story were decided upon.

Climax—Pandora opens the box of troubles.

Previous events. Pandora comes to live with Epimetheus. They are happy till Pandora discovers the box. Epimetheus tells how it came there, but refuses to open it. Pandora's curiosity is aroused. She unties the cord around the box. Epimetheus does not prevent her opening the lid.

Subsequent events. The troubles begin their work on Epimetheus and Pandora. They go throughout the world. Hope finally is let out of the box.

Important characters. Epimetheus. Pandora.

Unimportant characters. Other children. Mercury.

Necessary setting. Time—Thousands of years ago. Place —A land of flowers and sunshine.

After this outline had been made the pupils practiced telling the story.

DRAMATIZATION

"The Pied Piper of Hamelin," Browning.

M. E. Coulter.

AIM: To guide the class in making the story of the Pied Piper into an interesting play to be acted for another class.

The story is recalled in the class. How else might this story be told? Suppose you had read an account of a fire in the newspaper and then heard two eye-witnesses of the disaster tell about it. Which would be more interesting? Why? What would they be doing while they were talking? Today we shall begin to tell the story of The Pied Piper of Hamelin by means of conversations between the persons who are in the story. What shall we call this story that is told through conversations? What shall we name the play? What persons are to do the talking in the play? Why can we not decide definitely now on all the characters we shall have?

How many of you have seen a play? What were you given that explained the play to you? What else did you find on the program besides the name and list or cast of characters? What things must we always tell in the beginning of a story? These same things are also necessary in the play; only we arrange them in a more orderly way. Let us write on the board a neat and orderly arrangement

of subject of play, cast of characters, the time and the place. A play is usually divided into parts. Let us see into what parts this story would be divided. What are the most important things that happen in the story of the Pied Piper? Sometimes an action begins at one place and ends at another. Since only one place can be represented on the stage at one time, how must the act be divided so that there may be time to change scenery?

What is the first important fact we learn about Hamelin? In the story we can say "The people of Hamelin were in great trouble because of a pest of rats." How must this fact be represented in our play. Whom shall we have to tell this? How can we let the audience know whom to expect to see in the first scene of the first act? Who would be most apt to be talking about the damage done by the rats?

Since this play takes place in Holland, which names should we use? The word for housewife in Dutch is *vrouw;* for citizen *burgher.* Where might these housewives be going? Are the first housewife and the second housewife to stand still without doing anything, as if they were reciting a memory gem? Why not? Write the names of the persons who take part in the first scene, where they are, and what they are doing.

Now we are ready to write what they say to each other. Let us recall some of the damage done by the rats. What did they do? How much shall we have the first *vrouw* tell the second *vrouw*? Why not all? What would the other reply? What would they do besides talk about their trouble? How could you make the trouble with the rats seem more real! By what action? What do we need in addition to a speech from each of them and the dropping of a rat from the market basket to make clear to the audience that the trouble with the rats was very great indeed? Why would it be natural for other persons to join these two who are

talking? How should their coming be explained to the audience? Who might they be? What would each say? As these characters talk about their troubles with the rats, what conclusion will they come to? What plan will they make? What will each say? To whom can they go for help? Why can you not represent them as going to the mayor immediately? How will you get around this difficulty? How will you end the first scene to keep prominent before the minds of the persons in the audience the fact that these rats had taken possession of everything?

This plan was used with a seventh grade for the first scene of the first act in the play. The following dramatization is the work of a pupil who in her zeal, wrote the whole play after the first lesson was given. It is not copied or corrected work, and is her own idea of what the play should look and read like. Of course, it has many faults, but in its spirit it has the things I am working for—life and action:

THE PIED PIPER OF HAMELIN

CAST OF CHARACTERS

First Burgher.
Second Burgher.
Vraue Van Studdiford.
Vraue Swarth.
Vraue Rubens.
Vraue Van Gilden.
Katrina Van Tassel.
Mayor and members of corporation.
Third Burgher.
Fourth Burgher.
Piper.
Lodewyk Rubens.

Time—1376.
Place—Holland.
ACT I—SCENE I.

Street Scene in Hamelin.

First Burgher—Something must be done. You should have seen the procession of rats coming through my hall this morning. They must have been going to the bedroom to find a comfortable place among my clothes in the wardrobe to spend the day in sleep. They were so well fed that it was impossible for them to get through one of the many places where they have dug boulders out of my floor.

There was no doubt as to where they were coming from, as the same thing happens so regularly. But I didn't fully realize it until my wife called me to the pantry. There everything was upset. The half of cheese that was brought home last night was borroughed into like a dam inhabited by beavers. A hand lamp that stood on the top shelf was overthrown, the chimney was broken, and the oil was spilt into a jar of cream that stood below. The victuals that weren't eaten were spoiled, and even the soap was gnawed.

Second Burgher—That's too bad. But I had worse experience. The ring I gave to my daughter for Christmas was dropped, and it rolled under the cupboard. We had the piece of furniture moved, only to find a rat-hole four and one-half inches in diameter. The ring may be found, but I doubt it. And that piece of jewelry cost me a small fortune. It cost me a fortune.

First Burgher—I heard that neighbor Van Dyssel was going to leave Holland on account of the rats. The baby was scared into spasms.

Second Burgher—That wouldn't be so easy for me do. Leaving Hamelin means leaving my friends and my property. I couldn't sell the property; there is no one to buy it, on account of this pest.

First Burgher—I was thinking, if someone would invent a trap that would work half successfully, his fortune would be made in a week.

Second Burgher—If I thought I could do it, I'd be satisfied to work my brain for money enough to give up the milk-yoke.

First Burgher—Ah! Here comes Vraue Van Studdiford. How happy she looks. She doesn't seem to ever worry about anything. (Enter.) Good morning, Vraue Van Studdiford.

Vraue Van S.—Good morning, my friends, how do you come to be out so early?

First Burgher—But you! It is more unusual for you to be out before nine o'clock.

Vraue Van S.—I am on a happy mission. I am going to Vraues: Swarth, Rubens, Van Gilden, and Vosmaer, to deliver invitations to my teaparty.

Second Burgher—Oh! that accounts for your smiling face.

CURTAIN

Act I—Scene II

Scene: Vraue Van Studdiford's tearoom, on same afternoon.

Vraue Van S.—I thought this would be the nicest way to entertain you this afternoon. It is so nice to have a friendly chat.

Vraue Swarth—And to find out what the neighbors are doing.

Vraue Rubens—Yes, it is nice to be neighborly and have little meetings.

Vraue Van Gilden—And are we going to have refreshments? Yes? I am so hungry. It is so pleasant to think I am going to eat lunch with my friends around me. And I am so fond of tea.

Vraue Van S.—Indeed? I will order it immediately. (Calls.)

Katrina! I am sorry Vraue Vosmaer cannot be with us this afternoon. Drying fish will keep her busy for several days.

Enter *Katrina*—Well?

Vraue Van S.—(aside to maid)— Katrina, will you serve some refreshments? And please be quick about it. Vraue Van Gilden is here, and I do believe she hasn't eaten anything since she received my invitation.

Katrina—Yes, Vraue. (Exit.)

Vraue Swarth—It is quite a surprise to see you at a social Vraue Rubens.

Vraue Rubens—Yes, I seldom go farther than my own dooryard. I am generally kept at home on account of Lodewick. He can get around very slowly with the aid of crutches. But I think he will outgrow it altogether, finally.

He is so lonely when I leave him, and he passes the long days at the little square-paned window, through which, beyond the redtiled cottages opposite, he can catch a glimpse of a patch of leaden sky, and a gray, flat, wind-swept country. An occasion pedestrian, in his loose garments, and a milk-cart now and then, pulled by those patient little slaves so often abused.

Enter *Katrina* with jar.

Katrina—Here Vraue is the tea. Will you have it served from the new teapot?

Vraue Van S.—Yes! hold it while I pour it in.

Vraue Van Gilden—Oh, it doesn't matter from what it is served.

Vraue Van S.—Hold it steady, Katrina!

Splash—Splash.

Katrina—Gracious! what was that? and that? Rats! two of them. Oh, two drowned rats, and all our good tea is spoiled.

Vraue Van Gilden—How discouraging!

Vraue Swarth—It is unfortunate.

Vraue Rubens—Refreshments ar'nt necessary to make our visit pleasant.

Vraue Van S.—I understand that. But it shatters all our plans for this afternoon. This is disgusting! and it must come to an end at once! Come Katrina, get my wraps and I will get the neighbors to go in a party to the mayor. I'll continue my tea-parties when I can rest assured I will not be interrupted.

Vraue Swarth—To the Mayor? Why go to him? There is no one with less brains or courage than he. How do you expect him to rid us of the vermin?

Vraue Van S.—But *something* must be done, and we may as well be the starters.

CURTAIN

Scene inside the courthouse.

Burgher (to mayor)—Well, haven't you come to any conclusion yet?

Mayor—Why—er—no, I don't know exactly what to do.

II Burgher—You ought to know; and if you don't, you are not fit for this position.

III Burgher—Traps! poisons! millions of traps couldn't answer the purpose. And to buy poison for all those rats would mean bankruptcy.

IV Burgher—Come on, mayor, show your wit. Do something, and do it quick.

Knock! Knock! Knock!

Mayor—Step aside, gentlemen, and let me reach the door. For goodness' sake don't nag at me so. I will think of a plan shortly. Come in.

Enter Piper.

Piper—Gentlemen, I know of the dilemma in which you are, and I have a secret, to rid you of this pest. For 1,000 guilders I will do so.

Mayor—1,000 guilders! we will give you 50,000, if you only keep your word.

Piper steps outside and plays.

CURTAIN

Inside of courthouse.

Enter *Piper*—As you have seen it with your own eyes, you cannot doubt but what I have kept my promise. Now, for my 1,000 guilders.

Mayor—Ha, ha, I have followed you far enough to see the rats coming from yards and allies, and tumbling out of hay lofts. I saw every one of them jump into the river. And I believe that rats once dead cannot come to life again. Never mind the guilders.

Piper—I have no time to waste. I am going to Bagdad, where I ridded a cook of a nest of scorpions, and I am invited to their feast this afternoon. I did not come down on his price, neither will I come down on yours. Are you going to pay me?

Mayor—Now, my good people, consult your carpenters and architects, and Hameline will be a peaceful town again.

Piper steps outside and plays. Children follow. (Exit All.)

Enter *rat*—How fortunate that I should be the only one saved. I was lurking quietly around the stable, when I heard the opening of barrels and boxes, and unscrewing of jars containing eatables not to be had every day.

This seemed to be directly before me, and as I went on recklessly, following that sound, with my relations forming a mass, running ahead of me. Suddenly we fell. Down, down, and before I realized it, I felt the waves of the Weiser dashing over me.

(Exit rat.) Enter people with crippled boy.

Crippled Boy—I heard such sweet music, that told me of a nice place, where I would have a good time all my life. I was to have anything I wished for, and I would not be lame any more or have anything to do but play. I wanted to go there and stay with my playmates, and so I followed the clatter of a thousand little sabots.

Finally we came to a mountain, where a door opened, and the piper and my playmates went in. Then the door closed and I was left outside. If only I could have walked faster, I would be happy now.

ARITHMETIC

Introduction.

All of the arithmetic lessons are based upon actual concrete material familiar to the children for whom it is intended. The large problem to be solved in each case is either the pupil's own problem, is easily recognized as the problem of some adult whom he knows, or has some direct connection with his life. Each problem involves much arithmetic. The children feel the need for the more mechanical work in order to reach the answers to their problems. These answers frequently prove to be of great interest and give a new attitude toward some of our commonest necessities, as in harvesting the ice crop in which the boys and girls were almost more interested than in skating. It is possible also that this interest carried over out of school and that the facts gleaned seemed worthy of discussion in the homes.

In the same way the lesson planning a playground probably brought a new appreciation of the playground to both the children and their parents.

In the lesson on making an apron the girls would not only learn through doing, but would add to their skill in measuring, in estimating measures, and in planning a piece of work before undertaking it.

The dairy lesson and percentage problems in dairying should of course be used only in a suitable locality and the basic facts should always be collected by the children themselves. These lessons are typical, however, of many local problems which are suitable for school work.

The excursion is typical of many that should be planned to lead to an understanding and appreciation of local industries. This series of lessons as they are resulted in an un-

usual degree of interest to the pupils and in the gathering of useful information. The series would be improved by a large well-defined problem which would determine what facts to collect and which of the many possible arithmetic examples should be stated and solved to arrive at the solution of the large problem. For instance—What does the piping for water works cost Cincinnati each year? What are the elements in that cost?

The problems are very definitely stated in the water works plan. The basic facts in this lesson could not be used again as they have changed in Cincinnati and would be different in another city, but similar ones would be easily obtainable. It would be interesting to compare the astonishing results with those from other cities.

The Building and Loan Association is common to almost any community and will be accepted by eighth grade pupils as a genuine problem worthy of intelligent study. This series necessitates the pupils keeping records of their findings from day to day and building up a series of ideas toward a large whole always guided by a definite problem or aim.

Harvesting an Ice Crop.

Carolyn L. Strasser.

My boys and girls were enjoying the fine skating early in January, when one day, they came in disconsolate, announcing that they were bidden to "keep off the ice." A local ice dealer had begun to cut the ice.

Later in the day I suggested that all pupils who could possibly do so, visit the pond to get some information and numerical facts which we would use in the class-room. The children made a note of facts wanted, as I suggested them, and to these they also added some given by the men.

My aim was to have the children see that the power and skill they gain in the schoolroom work may be profitably and

practically applied in the world about them, and that such local problems, the answers to which are worth working out and knowing, arise constantly in their own lives.

Report of Pupils' Work

Within two days after my suggestions were given to my class, (second week in January), the children came to school with much interesting information. Several of them were asked to post their "notes" on the bulletin board; others put them on the blackboard. I overheard many interesting conversations and questions as I moved from group to group during intermissions. I found that ice-harvesting was proving an interesting topic. From local statistics I formulated problems given, using the facts the children had brought in as a basis. There were some pupils who also brought in facts about cutting ice on other ponds, on the canal, etc.; and where possible these figures were compared with local figures and led to interesting problems.

Facts—secured by pupils as the basis of problems on ice cutting

Blocks cut 9 inches thick by 18 inches square.
Block weighs 200 pounds (average).
Icehouse 20 feet high, 30 feet wide, 50 feet long.
Average number of blocks stored by one man, 300 per day.
Number of blocks hauled in a wagon (at one time) 10.

Wages

Five cutters, $2.50 per day.
Four polers, $1.75 per day.
One driver, $1.50 per day.
Six packers, $2.00 per day.
One holder, $2.00 per day.
Two guiders, $1.75 per day.
One chopper, $1.75 per day.

MISCELLANEOUS

Twenty-three thousand feet of lumber in new icehouse.

Retail price of ice, 40 cents per 100 pounds.

Wholesale price, 20 cents per 100 pounds.

Mr. Peters estimates his "harvest" at 1,200 tons.

PROBLEMS

How many cubic inches in a block of ice?

How many blocks to the ton?

How much did one wagon-load weigh?

How many blocks were cut in a day? Weight of these?

How many days did it take to cut the 1,200 tons?

What amount was paid out in a day for wages?

Find amount cutters (five) received for the days they worked.

Find value of the harvest at wholesale price.

Find value of the harvest at retail price.

What amount would the dealer gain by selling wholly at retail price?

What will be amount I must pay for ice if the dealer puts in 20 pounds every other day in June?

What will it cost a household to use 10 pounds of ice daily during June, July, August, and September? Find weight of amount used.

The children were interested and worked well on these problems. Some good problems of their own were worked out, also. A considerable number of other interesting facts arose in connection with this subject, and other problems were given, and used in summarizing what we had learned about harvesting an "ice crop."

Planning a Playground.

Lucy Saunders.

The following problem is intended for a school just awakening to playground needs. Therefore the work is

sufficiently connected with the present life of the children to be properly motivated.

PROBLEM—To find how much our playground should be extended and how it should be divided.

Playground workers have agreed that the least amount of space a playground should have is 30 sq. ft. per child. We have 600 pupils in this building, how large should our playground be? We have now two lots 50 ft. by 80 ft., what is the size of our present playground? How much then should our playground be extended in order to meet the minimum requirements? How many times larger would it be than at present? How compare with an acre? How should we divide this space? Baseball diamond, basketball court, apparatus and free space.

A fair-sized baseball diamond is 60 feet on a side. How many square feet would this take? How many square feet will it take for the basketball court? How long must a court be? 40 feet. How wide? 30 feet. How much ground does that leave us for our apparatus and free space?

We have found (1) how large it must be to fill minimum requirements and we have decided (3) how this is best divided. Tell the results of our work on these two points.

Arithmetic and Industrial Work, Making an Apron.

Minnie L. Dugan.

PROBLEM—To find the cost of an apron to be made according to following pattern. This pattern calls for the following measurements:

Body of apron: length, 24 inches; width, 25 inches.

Band (finished): ¾x26½ inches.

Strings (finished): 2¾x20 inches.

Hem: 3-16 inch.

Allow ¼ inch for all turns except in a narrow hem; then ⅛ inch turn.

Materials assumed are:

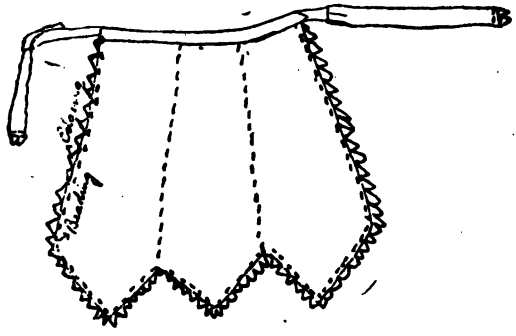
Muslin, 27 inches wide.

Edging, 5/8 of an inch wide.

Inserting or beading 1/2 an inch wide.

(The pupils are expected to copy the pattern from the blackboard and tabulate the facts as they are disclosed in the discussion.)

How shall we find the amount of material needed for the body of apron? Measure. For what else do we need material? Band and strings. Lengthwise or crosswise? Why? Where shall we cut these? How much extra length do we need? Discussion of length and width of strings. What is the width of strings to be? How wide must they be cut?



How much edging will be required? Will the edging go straight around the points? How meet the difficulty? Explain gathered and mitered corners. Which is the better in this case? Try placing the tape measure around the points. Estimate amount required. In general the extra length for points must equal the width of the trimming. Why would this be true? Then how much is needed to miter each point? How much for the outward turns?

How much inserting will be needed? Measure as for the edging. How does the width compare with the edging? What difference does that make? Where else is the insertion required? Two middle strips and ends of strings. How much altogether?

In estimating the cost of the apron what else must be considered? Cost of making. What do you know about the daily wage for plain sewing? How many hours a day? How much time would this apron take? Why would it differ? Why do some workers earn more than others? Discuss the fairness of this.

Let us determine the cost of the apron. What facts must we collect? What added information do we need? The muslin is 37½ cents per yard, the edging and insertion each 12½ cents per yard.

How wide were the band and strings cut? What material will be left? What suggestion have you for using this material? If twelve of us make aprons alike what difference will it make in the amount of material needed? What difference in the cost of each one?

A Dairy Problem.

Ella C. Sweeney.

(For children in a dairying community.)

The children have been studying dairying and have visited a scientific farm. They have studied rations and copied the amount which a cow produced and amount which she ate from data supplied by farmers.

Food in 1 week

240 lbs.	silage	at $ 2.50	ton.
84 "	alfalfa	at $10	"
28 "	bran	at $24	"
28 "	meal	at $20	"

Produced in 1 week

115 5-13 lbs. milk; 5% of this is butter
80% " " " skim milk
15% " " " buttermilk

Butter value is 32c lb.
Skim milk 16c per 100 lbs.
Buttermilk 12c per 100 lbs.

Does it pay to keep this cow in the dairy?

Each child might now select a particular cow from a dairy, get data from the chart in the barn, and find out if she were worth keeping.

Accuracy could be motivated in this way; if children do not secure right result, the teacher may show how he would make a poor farmer if he could not tell exactly how much he was making on every cow.

Percentage Problems in Dairying.

Marjorie Meiklejohn.

TEACHER'S AIM—To teach the meaning of percentage, the fractional equivalents and the first case in percentage.

PUPIL'S AIM—To learn to figure on the milk question as father does.

Did you ever hear father tell how much his milk tested? He said one month it tested 4%. What did he mean? If no one knows, teacher explains that he meant that in every one hundred pounds of milk there were four pounds of butter fat. Why then didn't he say that? Because it is shorter and easier to say 4%. If 4 pounds out of every hundred pounds is butter fat, what part of the whole milk is butter fat? 4-100 or 1-25. If there were only 100 pounds of milk, how much butter fat would there be. 4 pounds. But if there 200 pounds of milk? Twice as much or 8 lbs. If there were 350 pounds of milk? 3½ times as much or 14 lbs. But

if there had been only one pound of milk what part of a pound of butter fat would there be? 4-100. Express it as a decimal, too. .04. If there had been 18 lbs. of milk, how much butter fat? 340 pounds? etc. Teacher passes to board and shows them the form 350 times .04 pounds of butter fat equals 14.00 pounds butter fat; or 350 times 1-25 pounds of butter fat equal 14 pounds of butter fat.

Teacher questions to see that each form is understood. If such a thing were possible as having 10% milk, what part would be butter fat? 10 pounds out of every 100 pounds or 1-10 of whole. 25% milk? 50% milk? 15% milk? 16 2-3% milk? Put on the board the %s and their fractional equivalents. Who would have more butter fat, your father with 200 pounds of 4% milk or Mr. Jones with 300 pounds 3½% milk? Why does father care so much what his test is? Because income depends on the amount of butter fat, not on the pounds of milk. Suppose last month he had a total of 4250 pounds of 3% milk and this month a total of 4050 pounds of 3½% milk. Which month will he have more butter fat? How much will his check be this month if butter fat is worth 40 cents per pound? If next month his test is the same and amount of milk the same, but the price of butter fat is 10% higher, what will be his check?

Different pupils may tell the amount of milk obtained on different days and their test; then all figure for the daily income from each dairy reported; then figure for weekly and monthly incomes with prices of butter fat varying.

Assignment—1st. Let each figure today's income from the home dairy, using market quotation price as found in papers for butter fat. 2nd. Let each one bring in a clipping from newspaper advertising section, which uses term %—then let class interpret its meaning the next day.

An Excursion to a Great Industrial Plant.

(Published in October, 1911.)

Frank M. Hayes.

Our class in arithmetic decided to visit the United States Cast Iron Pipe & Foundry Co., at Addyston, Ohio; so we spent one day in talking over the kind of plant the foundry company had and made notes of some things we wanted to find out.

The plant at Addyston is one of a group of eight which are united into a trust. The Addyston plant is one of the largest and is only about 10 miles from Cincinnati, Ohio, on the Ohio River, and is connected with the Big Four Railroad and Baltimore & Ohio Railroad by switches. It is engaged exclusively in the manufacture of cast-iron pipe and special castings to make the connections.

We expected to be interested especially in the foundry and molding shops, and were going to be on the lookout for any information that would help us in our practical problems in the schoolroom. We made a list of questions before starting, as follows: What raw materials are used in the manufacture of pipe? What is the cost of the iron per ton? Is it received by rail or river? Which is the cheaper way? How much iron is needed to make a pipe? What processes does a pipe pass through in its manufacture? How many pipes are cast per day? About what per cent. turn out good? What is done with poor pipe? How much is a finished pipe worth? Is it sold by the pound or lengths? Where are they sold? How long is a pipe? How many men are employed by the company? How many skilled mechanics? What system is used in paying off? What amount of insurance is carried? What fire protection has the company ? What is the amount of taxable property?

This was the general line of information we were going to seek, and expected to find out much more that would be suggested as we went along.

Upon arriving at the grounds we were amazed at the size of the plant. We found it covered about forty acres and owned sixty acres outside of the main grounds. The company has its own private railroad incorporated, with about seven miles of track, a large switch engine, a rope-making factory, two molding shops, a large pipe shop, a pattern shop, a machine shop, two cleaning sheds, a pattern-storage building, an electric light plant, a private water works, and two hotels where some of the employes board.

The first place we visited was the pig-iron yard. Here we saw between 9000 and 10,000 tons of pig-iron all ricked up. Men were hired by the ton to carry this out of the cars and rick it up. We found that a man had a yearly contract to unload this iron at five and a half cents a ton. He hired other men to do the work at five cents a ton, and thus he made one-half cent on each ton unloaded. The average number of tons on a car was 30, and, as a rule about 300 tons were used daily. This was extra money for the foreman, as he received a salary for other work which he did.

We asked the price of iron, and were told that scrap costs about $14 to $15, poor grade from $16 to $20 per ton, and from that up to $27 a ton for good grades.

This information formed the basis for the following questions. There were 9500 tons of iron in the yard, costing on an average $22 a ton. What was it all worth? 300 tons are used daily. What does the pig-iron cost the company at an average of $18 a ton? How much does it cost to have the 300 tons unloaded? What amount of money is received by the foreman for unloading the 300 tons? What per cent. is that of what the men receive? This iron came from

West Virginia and Tennessee, and the freight rate was about 50 cents a ton. What did the freight on a car holding 34 tons cost? What was the total freight on the train of cars carrying 300 tons?

Next we visited the pattern shop. Here patterns are made for every new irregular-shaped casting. It was a very up-to-date shop, and there were 38 men employed and three apprentices. The average rate of wages was $2.75 a day. Some made a good deal more and some less. What does the pattern shop cost the company in wages to run it a week? A month? A year? The foreman told us that they used about a carload of lumber (10,000 or 12,000 feet of pine or cypress) in about three weeks. What does this cost the company at 4½ cents a foot? The lumber was shipped from Michigan. The freight rate was 18 cents a hundred pounds. The car weighed 20 tons. What did the freight amount to?

From here we went to the pipe shop. This was very interesting, but we thought it very dangerous. Large cranes were swinging around carrying pipes or flasks weighing ten or twelve tons. There is a double set of pits to work with. One pit is filled with cores and flasks one day and the hot molten metal poured in. This must set and cool off. The next day these pipes are taken out and the other pit is filled.

The average wage in the pipe shop is $1.75 to $2 per day, and there are about 150 men employed. Hot melted iron is poured from large cups into immense ladles, and these are lifted by cranes and poured into molds, where the iron cools in the shape of a pipe. The pipes range in size from 4 inches to 72 inches in diameter. A four-inch pipe requires about 265 pounds of metal, while a 72-inch pipe requires about 14,000 pounds. Limestone is mixed with iron and causes the slag to separate out. It takes about an equal

amount of coke to melt iron when all conditions are favorable.

The average wage paid in the pipe shop was $1.85 a day. What do the wages amount to for a single payday of twelve working days? Compute the cost of the iron in a 72-inch pipe weighing 14,500 pounds at $18 a ton. Find the area of the opening of the pipe. 200 four-inch pipes were cast in a pit for a days' work. What was the value of the iron used at $20 per ton? 12 pipes of the cast were bad, what per cent. of the work was lost? What per cent. was good? The six-inch pit cast 160 pipes per day, averaging 408 pounds. About 92 per cent. were good. What will be received for them if sold for $25 a ton? The 12-inch pit cast 90 pipes per day each weighing about 1100 pounds. An inspector accepted 65 pipes which sold at $26 per ton. Twenty of the others were good enough for drain or culvert pipes, and were sold at $21 per ton. The rest were scrapped. What did the company receive for the day's cast?

We were shown the system of paying their employes. Their regular payday is every other Saturday. If anyone wants money sooner than that, he can get a "cash order" from the timekeeper and the cashier deducts 10 per cent. for cash. A man who earns $1.65 a day asked for a cash order at the end of the first week. What did he receive? One week the money deducted amounted to $300. How much money had been drawn on cash orders? There were about 950 men employed and the payroll amounts to $23,000 every two weeks. What is the average rate of wages per week?

When the company takes a contract to furnish 450 lengths of 24-inch water pipe at 2450 pounds per length what are the pipes worth at $27.50 a ton? The Cincinnati water-works ordered 1000 lengths of 60-inch pipe at 10,500

pounds each and 980 lengths of 48-inch pipe at 9940 pounds each. What was the amount of the bill at $26.50 a ton?

New Water-Works of Cincinnati.

Nanabel McNelly.

I. To find out whether it is cheaper for a certain family to pay survey rates or meter rates for a year.

At survey rates for the use of water for six months, the bill would have been:

9 rooms	$2.65
2 faucets at	.45
2 laundry faucets at	.75
Motor wash machine	2.00
Bath	2.75
Wash stand	.45
Hose nozzle	1.35
Sprinkling lawn, ¼ cent per square yard	
Size of lawn	25x60 feet
Sprinkling street, 15 cents per lineal foot of front —60 feet.	

Complete the bill and find the total amount for 6 months. For 1 year.

Show receipted water bills and meter rates. The water bill of this family for the month of April was $1.00. What was the rate? How many gallons were consumed in that month? in one day? For a family of four what was the daily amount per capita?

This water bill gives,

Index at this reading, 30,400;
Index at last reading, 29,100.

How many cubic feet were used? Find the cost at 7½ cents per 100. Allowing a discount of 5% if paid within a certain time, what is the net amount due? Considering this

the average month, what is the total cost for 1 year? What is the total number of gallons used. Yearly amount per capita?

Which is cheaper and how much? What per cent. is saved? During the month of August no water was used. If the minimum (rate) per day is 2 cents for a one-inch meter, what is the bill for that month? Of what value is a meter (1) to the City Water Company? (2) To the consumer?

II. To find the necessary amount of water to be supplied by the water works to Cincinnati. (This was written and the facts were collected in 1911.)

What facts do we need? The daily amount per capita we have already for one instance, so we can use that. Take the population of Cincinnati at 350,000, how many gallons per day must the city water-works supply? The number of gallons actually produced daily during 1908 was 41,737,487. What was the average daily amount per capita? In what ways is water used for your benefit aside from that which comes to your house? In what ways is water used for you in the house aside from your own personal use? What proportion of your 120 gallons do you think you personally use?

III. To find the actual cost to the company of water delivered to the consumer.

1448 tons of coal were used. At $2.20 a ton what was the cost of coal?

The number of tons of lime used for precipitation of particles in the water was 1,028.40. At $6.16 a ton, find the cost of lime. What is the cost per million gallons of water? How much lime is required for 1,000,000 gallons of water? for 1 gallon? (.89 grain.) 1,754.15 tons of sulphate of iron were used. At $11.35 per ton, find the cost of sulphate. What is the cost per million gallons of water? How much lime is required for one million gallons? for 1 gallon? What

is the total cost of chemicals per million gallons of water used?

Thirty-four men are needed to operate the filters. The pay rolls amount to $24,828.07 for the year. The cost of electric power and light is $5,299.95. Other items of cost of operation of filters are:

Supplies	$4,079.06
Express and freight	205.00
Repairs	617.95
Water for washing	1,971.22
Water lost by leaking	425.89
Advertising	228.13
Insurance, telephone, etc.	124.70

Find the total cost (including fuel, chemicals, etc.). What is the total cost per million gallons of water? What per cent. of the total cost is represented by chemicals? by labor? by fuel? by power?

At the pumping station the total cost is $102,043.15, which includes labor, fuel, light, etc. What is the average cost per million gallons? The total cost of operation, maintenance, and repairs for 1908 was $245,749.97. Find the total cost per million gallons. What is the annual cost per capita for supplying clear water to a population of 350,000.

In the year 1906, under the old water works, the cost was $487,200.05. How much was saved by the new works? What per cent? At 75 cents per 1,000 cubic feet, what is the cost per million gallons paid by the consumer?

A Series of Lessons Based on the Operations of Building and Loan Associations.

Frederick D. Lotter.

In developing this plan an attempt has been made to work out a real situation in which the children would be able to

get a clearer insight into the workings of building associations and to arouse interest in a problem that may easily be a vital one of any community. In doing this much computation has been introduced which should give opportunity for profitable review of work in interest as well as in the fundamentals. This is not to be considered as material for one or two lessons, but rather as a series of lessons on the same topic. A conservative estimate would place the number of lessons necessary for the careful development of this problem at 15 half-hour periods. It will be found that many of the points will require enlarging. The answers of most of the important questions and problems are indicated and are intended for the use of the teacher only.

I. Introductory.

The ambition of most men is some day to own a home. What ways are there for a man to get a home of his own? He may either buy or build. Let us take into consideration first the things necessary for the building of a home. What will we have to have first? A lot. Before we buy this lot we must find out how much we can afford to pay. Let us suppose that we all start out under different circumstances, having different amounts of cash on hand, salaries per month and rates of monthly rent. A table such as the following may be worked out. Divide the class into as many groups as necessary.

Groups.	Rent per mo.	Salary per mo.	Cash on hand.
I	$15.00	$50.00	$1000.00
II	10.00	40.00	600.00
III	12.50	55.00	900.00
IV	30.00	150.00	1600.00
V	16.00	90.00	1200.00
VI	20.00	85.00	1500.00

How shall we pay for the lot? Suppose we pay cash for it, what will determine, for each group, the price and size of the lot? Cash on hand. The children investigate the price

of property in different localities and account for the difference in price. Discuss the size of the lot most desirable. Have specific cases of the transfer of property, showing deeds, survey, etc.

What is the next problem now that we have our lot? Building of the house. By investigation find out the cost of building various-sized houses. How can we pay for the house? What method can we use to save money? Suggest various plans for saving money or ways in which money may be obtained. Borrowing from private parties, banks, savings banks, insurance companies, building and loan companies. What are the advantages and the disadvantages of each as you know them? What have you found to be the best way to save money to buy something that you want? By regular deposits most people can save more than by any other method. Where are regular payments required?

II. *Let us devise a system by which we can save money to build our homes.*

How can we best do this? Instead of each one saving his money individually, let us form an organization for this purpose, of which each of us is a member. What must we decide first? Amount of weekly payments. What will determine the amount of each payment? Our incomes. Let us suppose each member agrees to pay in $20 per month. How much money would be taken in each month—25 members? How much in four months? Six months? One year? For various other periods?

If it cost approximately $2000 to build a cottage, in how many months would this organization have sufficient money to pay for one house? Every four months, then, the association could build a new house. What will be done with the first house when it is finished? How would we decide which of the members was to occupy this house? Whose

money was used to build it? All members, then, must have equal chance. How would you plan this? Select by lot.

How could the other members be paid for the use of their money? Charge interest. What is the legal rate? Six per cent. in a number of states. What amount would he have to pay 6 per cent. on? $2000. Why? What would his interest amount to each month? $10. How can he afford to pay this extra money? Rent. What would be done with this money? Either save it or pay it back to other members. Which would be the better plan? Put it in a general fund so that the other members would get houses sooner. How would the members secure themselves against loss in case the member occupying the house stopped paying? Take out mortgage. Explain a mortgage. How soon would there be money enough to pay for another house? Four months. When this house was occupied, what would be the total income from interest per month? $20. How much would each new house increase the monthly receipts? $10. How long would it take to supply each member with a house? One hundred months.

What effect would the accumulating interest have on the length of time before all members were supplied with homes? Shorten it. How much? Work far enough to see how much of a problem it is. In about eight years, then, the members would be all in their own homes. What is now to become of the association? Go out of business. What have been the advantages of the organization? About 100 years ago 50 men in England did practically this thing, and their organization was the first building and loan association.

While our organization was in existence suppose that one of our friends who wished to own his own home, should hear about the association, what would he wish to do? What would he have to do so as to be on a basis with all the other

members? Pay back dues. Suppose that the association was two years old when this new member came in, how much back dues would he be obliged to pay? $480. Figure back dues for several different periods, such as 6 months, 8 months, 1 year, 1 year 2 months, 16, 18, 19, 25 months, 5 years, etc. Many people would be attracted by this opportunity; what new problems would come up to the managers of the association? Accommodation of new members.

III. *Let us try to work out a plan to accommodate new members.*

If there were a sufficient number of these new members, how might they solve the problem?

What objections might there be to starting a new association? What other plan could you suggest? For a new association inside of the old one—*i. e.*, get 25 men who would agree to pay $20 monthly and form an association within the old one, keeping all accounts separate. If these new members increased about 25 each year, a new division could be established to accommodate the new members. So they would issue a new series of stock, as they call the shares, each year.

Suppose a new series was issued on January 1, and on May 15 a new member wished to join, what would be the amount of his back dues? Issuing shares of stock every year, the general nature of the association would be changed. This new kind is called a "serial association." How long would it take by this system for 25 of the members to get their homes? About eight years. So after eight years one group of stock would "run out." Each year one series would "run out." What does this mean? Twenty-five men are supplied with homes. This style of association is to be found today, but is not generally in use.

IV. *Let us suppose one member is not satisfied with the $2000 home.*

What arrangements could be made to build, for instance, a $4000 or $6000 house for this member? Pay more each week. What, then, will determine the price of the house that a member can build? Monthly income. From our table of monthly wages let us determine which of us can afford a $4000 or $6000 house. What would the monthly interest be on $4000 and $6000?

As the organization became more widely known and developed a larger membership the business would grow to such an extent that new series of shares or new associations would be started to accommodate the new members. When a man got his house, and finished paying for it, how could he continue as a member? Keep on with regular payments and the association pay him interest for the use of his money. What would determine the rate of interest? Profits.

Let us see, now, the actual method of computing the interest as used by building associations. Take the case of the man paying $10 a month. Interest is always figured semi-annually. What would be this man's credit at the end of six months? $60. Now, how much of that $60 was actually on deposit six months? $10. On what should we pay the interest? What is the difficulty? In order to simplify the work of finding interest the rule of taking one-half of the amount paid in his been adopted. On how much would they figure the interest? $30. If the rate of interest was 6 per cent. a year, what would it be each half-year? Three per cent. What, then, would be the interest for six months on $30? 90 cents. At the end of six months what would be the total credit? $60.90.

V. *Let us find out if the members are getting all the interest due them.*

How was this $60 paid in? $10 each month. How long was the first $10 on deposit? Six months. The second $10? Five months. Continue this questioning until the following table is worked out:

1st	$10 on deposit	6 months.
2nd	$10 on deposit	5 months.
3rd	$10 on deposit	4 months.
4th	$10 on deposit	3 months.
5th	$10 on deposit	2 months.
6th	$10 on deposit	1 month.
		21 months.

How long was $10 really on deposit. Twenty-one months. What is the interest on $10 for 21 months? $1.05. What is the difference between the exact interest and the way it is figured by the building association? 15 cents. Who is favored by the difference? Why do they not figure the interest exactly? Extra work would require employment of extra office help. If 15 cents is saved on every $60, how much is saved on $120,000, on $180,000? What needs of the association will this money holp to pay? What are some of the items of expenses? Account books, stationery, office help, rent, etc. The total amounts to about $1000 a year, depending on the size of the association.

If many should apply to be allowed to put their money with the association how would this change the nature of the organization? Cash on hand. Having money on hand, what could they do instead of waiting for each man to pay before building? Loan him the money at interest to be paid back in installments.

VI. *Let us follow out in detail what occurs from the time a man borrows a sum of money until it is all repaid.*

In one association money is loaned in $500 lots. Each $500 is called a share of stock. Why do you suppose they made $500 the unit? Other associations have different values. Let us take the case of a man who wished to borrow $5000. How many shares would that be? Ten. What plan would you suggest by which they could determine this man's weekly payment. Pay $1 per share per week; this would be just for both large and small borrower. What would be the total that this man would pay each week as return on his loan? $10.

Besides return on his loan, what is he obliged to pay? Should this *interest* affect the amount paid off on the loan? Why do they charge interest? What is the legal rate? Six per cent. Let us find the interest that this man would pay. What will be the principal? $5000. In order to make the keeping of accounts easier, what divisions of the year would you suggest? Into one-half and one-quarter of a year. How many weeks in one-half year? Twenty-six. How many in one-quarter? Thirteen. What would the interest on $5000 be for six months? $150. How much would that be each week? $150 divided by 26 equals $5.77. On how many shares is that the interest? Ten shares. What, therefore, is the interest on one share for one week? $.577. What will be the amount charged on one share? 58 cents.

Figuring on that basis, what does this man pay off on his loan each week? $10. How much for interest? Ten times $.58 equals $5.80. What is the total? $15.80. At this rate a week what does he pay in each quarter of 13 weeks? How much of this is dues? $130. How much interest? $75.40. What would the dues be for a half-year? $260. Interest? $150.80. How much does he still owe? $5000 less $260 equals $4740.

What did we find the association did at the end of each half-year? Pay dividends. To what dividends has this man a right? Review methods of figuring dividends, one-half dues paid. How much dues has he paid in this time? $260. On how much of this do we pay dividends? $130. What, then, was his first dividend at 6 per cent. per annum? $3.90. What would be his total credit at the end of the first year? $263.90. What does he still owe? $4736.10.

What great difficulty would this make in the work of keeping books? What should he pay interest on now—*i. e.*, what will be the new principal? $4736.10. Is there any way in which this work could be made easier? Charge interest on the entire amount until this is paid off. Why is the association justified in charging this extra amount? Members of the association getting dividends. So the interest continues at a flat rate of 58 cents a share per week until the end. In figuring dividends at the end of the second half-year, and always after, the total credit of the half year preceding is added to one-half the dues for the current one-half year, *e. g.*, $263.90 plus $130 equals $393.90. Suggest a way to simplify our problems for the future.

VII. For our own convenience, let us make a complete table showing dues, interest, dividends and total credit from the beginning to the end of a loan for each half-year. The teacher should formulate problems showing dues, interest, dividends and total credit on a loan for each half-year until the following table is worked out:—

Table Showing Course of a Loan.

Basis, One Share, $500. Six per cent. interest. Six per cent. dividends.

Date.	Dues.	Interest.	Dividends.	Amount.
March 10, '01	$26.00	$15.08	$0.39	$26.39
September, '01	26.00	15.08	1.17	53.56
March, '02	26.00	15.08	1.98	81.54
September, '02	26.00	15.08	2.82	110.36
March, '03	26.00	15.08	3.69	140.05
September, '03	26.00	15.08	4.59	170.64
March, '04	26.00	15.08	5.49	202.13
September, '04	26.00	15.08	6.45	234.58
March, '05	26.00	15.08	7.41	267.99
September, '05	26.00	15.08	8.40	302.39
March, '06	26.00	15.08	9.45	337.84
September, '06	26.00	15.08	10.50	374.34
March, '07	26.00	15.08	11.61	411.95
September, '07	26.00	15.08	12.72	450.67
March, '08	26.00	15.08	13.89	490.56
June, '08	9.44	5.80	.....	500.00
7 yrs. 8 mos. 2 wks.	$399.44	$232.00	$100.56	$500.00

What per cent. interest has this man really paid?

Dues paid	$399.44
Interest paid	232.00
Total paid	$631.44
Loan rec.	500.00
Cost of loan	$131.44

What per cent. of $500 in $131.44?

It soon became very inconvenient for the borrowers to wait for the time for the starting of a new series of stock, so instead of having only certain times when a man could start his loan, they made it possible to come in at any time. In this way each member became a series by himself. This is the present "permanent plant" of building and loan association.

Let us suppose a man who had money to invest asked you for advice. What arguments would you advance to induce him to invest his money in a building association rather than a savings bank? What are some of the chief arguments against this? How does a building association compare with a life insurance company as a method of saving money?

GEOGRAPHY

Introduction.

The lessons in geography are of various types but they have one point in common—the writers have attempted to make geography a study of people—where they live, what they do, and how they are related to the children's lives.

The plan on Australia was an attempt to follow the old causal outline and make it real and concrete. This was accomplished to some extent. The pupils were trained not only in interpreting maps and using scales, but they thought distances in terms of time and gained some concrete ideas of the position, size and climate of Australia. The writer at first objected to its re-publication on the ground that the method of attack was quite out of date. Her suggestion for improvement was:—"It seems to me that the study of Australia now might well come through the question of which colony is helping England most in the present war, what resources can be counted on, etc. Or, it could well come through a study of the woolen industry. I would advocate more use of books and more work for the children in finding out about Australia and not so much given or suggested by the teacher."

The India lesson is an example of a good and unusual aim finely worked out. The teacher asks some questions which pupils could not fully answer, such as: "What strange sounds would we hear?" "What strange people might pass by?" but an attempt to think them out would increase the interest as the teacher gave the additional word pictures.

The Erie Canal problem is definite and always kept in mind. The same general procedure could be followed in

similar subject matter, such as the Suez Canal and the Roosevelt Dam.

The chief value of the oyster industry plan is the children's use of references to answer definite problems. The success of such a lesson would depend upon the conduct of the reports and class discussion. The reports should be informal and include only the points called for in the problem. Each report should bring from the pupils questions and discussion until they were satisfied that they had solved the problem.

In contrast to this is the industry lesson for a lower grade, in which the teacher presents the material. Her questions lead the children to supplement the thought of the text and to raise each new problem as it occurs and attempt its solution. The reading confirms, corrects and supplements their ideas.

The group of lessons giving intensive work on a single section of country present a variety of method and aim. The lesson on sugar was published in 1915. Present conditions would make possible interesting changes and more vital problems.

To Teach Location, Size, Surface and Climate of Australia.

Julia Detraz.

Today let us start on an imaginary trip to a far-off land, Australia. Before we can make wise preparation for the trip what information must we have?

Where Australia is situated.

The route we must take.

How long it will take

The kind of country; size, climate, people.

(Use hemisphere map and globe, with steamship lines marked.)

In what direction shall we go from the United States? Which route shall we take? How far is it? How find out? Use scale and maps. I wonder how long it will take for the trip? How long does it take to go from New York to Liverpool? How far is it? 3050 miles. How far is it from San Francisco to Sydney? 6500 miles. How long, then, should it take for the sea trip? 13 days. As a matter of fact, it takes 19 days for the sea trip from San Francisco to Sydney. Why?

How long does it take to go from Cincinnati to San Francisco by rail? How many days for the whole trip? 24. So, if we start today, June first, when will we reach Sydney?

Since we are to be nearly three weeks at sea, what kind of clothing shall we take? We are starting in June, what kind of clothing will we need at the start? In seven days we will reach Honolulu. What kind of clothing will we need here? Here we find that people wear white all the time. Now, as we near the end of our journey, what kind of clothing will we need? Why? Where are we now? In what hemisphere? What season? Winter. Why?

How far south is Sydney? What Atlantic Coast city is located in the United States the same distance north of the Tropic of Cancer as Sydney is south of the Tropic of Capricorn? Charleston. What kind of weather has Charleston in December? What kind shall we expect in Sydney?

Summary:

Tell in all the ways you can just where Australia is situated.

Now we want to find the size of the country we are going to visit. Using scale of miles estimate the greatest distance from east to west; from north to south. Estimate the area. Look this up in table in back of book. Compare with width, length and area of the United States. Here we have a coun-

try a little larger than the United States but with a population less than that of Ohio. Why is this so? Write down for consideration the suggestions of the children. Might be due to surface, climate, time of discovery.

Australia was discovered about the same time as the United States. From what countries would the explorers come? From what direction did they come? Where would they probably land? On the western coast. Use wind, rainfall and vegetation maps and find what kind of a country the explorers found here. What kind of reports would they carry home? What would be the result? So no one came to settle in this country. About one hundred and twenty-five years ago Captain Cook was sent by the English to explore the country. Just before he landed on the western coast a storm arose and drove his ship farther east, so that when he did land it was at about the point where Melbourne now is. Use your maps again and tell just what kind of country he found at this point. What reports would he carry back and what would be the results?

Let us see if the settlers did find this country adapted to home-making and affording means for livelihood.

Read the surface map. Where are the highlands? How high in the northeast? In the central part? In the west? What are our highest hills? How compare? Those in the southeast range about one mile; then compare with those in the northeast. These highlands are very beautiful and, therefore, help to make the country a desirable place in which to live. Show and discuss collections of pictures; discuss reports on beauty and picturesque elements.

Read the rainfall map. Why do you think the two extreme southern points have so much rainfall? In path of westerlies. From what you know of the country, where would you expect to find the rivers? Why? Consult the

map of Australia. How many rivers on the Eastern Coast? Why do none appear on the map? Slopes short and steep; rivers must be very short. In what direction will the rivers flow? Of what character? Of what value would these rivers be to the settlers? Navigation, timber, waterpower. How would these rivers affect the development of the country?

Find the longest river system in Australia. Trace its course. Estimate its length. Estimate the length of the Ohio. Compare. How do we rank the Ohio River system in size? Discuss the rainfall in this portion of the country. At the sources. What result will this bring about? In the summer season the Darling dries up until it is merely a series of pools and mud holes and in places one can walk across it on dry land. Compare with the Ohio. It has not a single permanent tributary. Of what value will this river be? Navigation, industry and waterpower. Development of the country. There was a man who wanted to find the source of this river. He explored and found that it arose in a great chasm, with beautiful tropical plants growing all through the chasm. The sides rose straight and steep 5000 feet.

Now we are ready to find out where the people live in Australia and what they do.

A good review question would be: Tell what differences it would have made had Australia been 100 miles farther south.

India: A General Survey Near the End of the Study

Mary Knappenberger.

AIM. To get the atmosphere of India.

"The West is the West, and the East is the East,
And never the twain shall meet."

Let us travel today along the Grand Trunk road, stretching west from Calcutta 1500 miles through Hindustan, and the Ganges River valley. The English government has made this road.

Why is this road-making good governing? Creative, rather than destructive. Looks after comfort of traveler,—conditions are primitive; old roads poor; much cartage; many foot passengers. Encourages travel,—which broadens the race; helps to break down caste; creates new customs in place of old, binding ones. Prevents loss through floods,—it is built on embankment in low districts.

For the most part it is shaded by four rows of trees. How would that help? What kind of trees would they be? Chiefly mangoes. Through the center runs a hard-packed road. On left and right the softer, rougher roads. How would the traffic divide itself? Swift traveling inside; slow traffic and foot passengers outside. Every few miles is a two-roomed police station; the police are native constables. What would be their duties? The native policemen are not only a help but a great trial. The race loves money and wrings fees from the traveling public in many ingenious ways. Child reports from "Kipling's "Kim"—given out the day before with marked passage and request to have it ready for class in this lesson, as follows: A policeman took an English printed label from a soda-water bottle, and affixing it to a bridge, collected taxes for a month from those who passed, saying it was an order, until an Englishman came along and broke up the graft.

There are government hostelries, called dak-bungalows, where one may change horses if on a long journey; and obtain food, a "chicken caught, killed, cooked and served in fifteen minutes," so some of them claim,—but apt to be "old as the hills" because chicken is not a food of the East Indian,

but is saved for the Englishman. What causes would tend to make these less and less patronized? Introduction of railroads; automobiles.

It is August. We are on this road between Umballa and Benares (use map) where the road runs on an embankment. How would the country look as it stretched away from us?

Farming country: crops of corn and millet, some wheat, rice and sugar cane.

Clumps of mango, palm, bamboo.

Low one-room huts, mud plastered.

Naked babies playing in the sun.

Women grinding corn with stones.

Men plowing with rude plows of sharpened sticks, drawn by lean bullocks.

Away to the north the snow-capped Himalayas.

Above all the staring, eastern sun.

What strange sounds would we hear?

A great mixture of tongues; India has many languages.

The grunts of the bullocks.

The creaking of the crude well machinery, turned by the bullocks stepping round and round.

The occasional trumpetry of elephants.

Parrots screaming in the tree tops.

The shrill call of the conches from wayside temples.

What strange people might pass by?

The clean cut Mahommedans, who shave their heads but not their faces.

Tall, well-built Sikhs from the north in blue-checked clothes and high blue turbans.

A native troop of Gurkahs, riding their ponies well, and looking smart in their uniforms.

Effeminate Bengalis—clerks from the coast schools.

Jat cultivators—patient, plodding, but thrifty, whose wives travel unveiled with them.

Brahmin—priest caste descendants—honored above all others even though they be beggars.

A whole village going to a fair, happy and gayly dressed. Women of all castes are then allowed the freedom of the road. To the farmer and his wife, who work seven days a week, a holiday is to be looked forward to for weeks. The children have a few pennies for sugar-candy canes, mirrors, to flash, whistles to blow.

A marriage procession: The bride for once in her life is given the honors. She rides in a red and tinsel dhooley, carried by four men, and surrounded by guests making merry. The bridegroom rides a pony bedecked with wreaths of marigold.

Wandering jugglers, with a trained monkey, or a performing bear.

A long line of women workers going to the railroad, to carry the dirt for the road bed in baskets on their heads.

Trains of pack bullocks with loads of grain.

A country cart with solid wheels.

A much-decorated closed cart, with escorts; it is a woman of rank traveling in seclusion.

What will they do at night? Weather permits camping. How does the season affect this? There are groups of stalls at camping places. What would they sell? Food,—no restaurant because caste does not permit men all eating together. Firewood for cooking and light. Sugar candy, a great favorite with all of them. Water, by the water-carrier with his goat-skin bag.

The men gather together and talk. India has no national pastimes. What do we do evenings? There they do not see the use of spending money to be amused, but they tell stories

and gossip. "India has gossiped for centuries—always standing gossiping in the bazaars until the soldiers go by." What do you understand by that?

CONCLUSION.

Changes are coming in India, coming slowly, "You can't hurry the East." He answers your protest, "It has always been so," or "It is the will of God," and goes on his way as before.

References: Kipling, *Kim.*
Compton, *Indian Life.*

The Erie Canal.

Benjamin W. Daily.

Specific problem: Why and how was the Erie Canal constructed?

What has made New York City important as it is? Which were the important cities in our country about 1800? Which part of the country was then being developed? What other cities promised at that time to become leading commercial centers? Find Chicago, New Orleans, Baltimore, Boston on the map. What in the situation of each of these was favorable to its growth?

At the close of the eighteenth century it was evident to the people of eastern New York and New England that the trade of the West would be drawn off in other directions. What could they do about it? Find on your maps the region around the Great Lakes. What are the products of this region? Why would it be very desirable to have all this material come to New York?

How was commerce carried on then? Why not by railroads? Steam locomotives were not invented until after 1800. The first railroads appeared in our country about 1824 but they were very crude and unserviceable. Wagons

were used. Why were the rates of hauling very high? It took three weeks and cost ten dollars to send a barrel of flour from Buffalo to Albany. From Buffalo to New York the charge was one hundred dollars a ton. The only cheap means of transportation was by water.

What were the disadvantages in water transportation in New York? What natural outlets has the Great Lake region to the ocean and the eastern coast? (a) To the northeast by the St. Lawrence River. Why would this not be used? The river is not navigable throughout all the year; it is a long and dangerous route; it passes through English territory. Why would the latter be a disadvantage?

(b) To the south by the Ohio and Mississippi river system to New Orleans. Steam boats were invented in 1807. Without railroads how might the development of the commercial relations of the Great Lake region and New Orleans have been vastly different than it has been?

The people of New York had to find some means of counteracting these disadvantages. What was the solution? A cheap means of transportation from the Great Lakes. Why was the Erie Canal a plausible suggestion? Trace on the map the route by water from Chicago to Buffalo. From Albany to New York. Since so much natural water way existed the canal seemed a good solution. Trace the Mohawk River. For nearly one-third its length the canal follows this river. Why did they not utilize this natural waterway also?

What problems would come up? Permission to construct a canal,—gifts of land; surveys; different levels; financing the enterprise; means of digging. One of the most staggering problems after the possibility of the canal had been established, was the matter of expense. It was estimated that it would cost more than six million dollars. Who was to bear the expense? Who would be interested? Why?

Was it not a problem for New York State alone? For the Great Lake region? How would the people of New Orleans feel? What would they do? The United States government? The people of New York State had high hopes that the Government would aid, but in 1817 it was settled that the Government would not help. Can you see why it refused? The close of the War of 1812 had left the country in a bad financial condition; the canal was a venture; it might give one portion of the country an advantage over another.

In what ways was the canal a big undertaking? How many miles from Albany to Buffalo? What would determine its width and depth? The canal was made 363 miles long, 40 feet wide and 4 feet deep. Compare with digging subway, where steamshovels, lifts, blasting were used. Which of these devices had they then? Every pound had to be lifted by shovels. At that time it was considered the greatest piece of engineering that had been undertaken in the United States. Where could they get laborers? Read or tell the class of the arrangements which were made; of the efforts of Gov. Clinton; of the use of convict labor. The work was accomplished in eight years, 1817-25, and cost $6,700,000. How could this money be regained for New York?

How would the people feel when it was complete? How could they celebrate? How send the news quickly, since there were no telegraphs? Use of cannon stationed in relay. What sort of a parade on the canal and down the Hudson? Tell the story of Gov. Clinton's triumphal trip in the large barge "Seneca" from Buffalo to New York, and the emptying of a cask of water from Lake Erie into New York Harbor, out beyond the Narrows. What did his act signify?

CONCLUSIONS—What would be the results of the completion of the canal?

Rates of commerce were cheapened. A barrel of flour was carried for thirty cents instead of ten dollars.

There was a great saving in time. What effect on prices of food stuffs?

What effect on cities along the route? Find Schenectady, Utica, Syracuse, Rochester.

From Buffalo, lake boats connected with Cleveland, Detroit, Duluth, Chicago.

Branch canals were added and western New York developed. Find them.

Summarize the influence of all these upon trade of New York City.

PROBLEMS FOR FURTHER INVESTIGATION—What is the importance of the canal today as compared with that time? What has caused the change? The canal is still important as a check upon railroads. Explain in what way.

What improvements could be made which would cause the canal to compete with railroads? Why cannot boats go through the canal by means of their own power? Why would it not be so big an undertaking today to deepen the canal?

What do you know about such improvements which are now being undertaken?

The Oyster Industry of Chesapeake Bay.

Lucy Saunders.

The following lessons are planned to be introduced by a study lesson of twenty minutes, followed by a ten-minute discussion period the first day. With this in view the first large problem will be stated, the reference books will be distributed, then the slips will be given to the pupils which will indicate the references and points to direct the study. The oyster industry is not unknown to the particular group

of children for which this work is planned. Their home is near the Chesapeake, on water parts of which might be used for oyster planting. Therefore it is felt that the work is sufficiently related to the child's life to be of interest and thus properly motivated.

AIMS—Why has the oyster supply of the Chesapeake Bay decreased? How may this be remedied?

REFERENCES:

Carpenter's "Geographical Reader—North America." The Life of an Oyster, How Gathered, The Oyster Market—Baltimore.

Carpenter's "How the World Is Fed," How Oysters Are Raised, The Enemies of the Oyster—drill, oyster sponge, star fish, Possibilities of Chesapeake, Oysters.

Kellogg's "Shell Fish Industries."

Chesapeake Industry, p. 212-214. 1880 High Water Mark, Report of Ind. Commission 1882, The Decline.

Kellogg's "Shell Fish Industry." History of the Industry in Virginia, page 215. 1879 Dredging Prohibited, 1892 Survey of Natural Beds, 1901 Virginia Leading State in Production.

Kellogg's "Shell Fish Industry." P. 217-220. The Custom as to Gathering Oysters, Harm Done, Rappahannock Dredges, Lease Sufferers Near the Maryland Line.

Kellogg's "Shell Fish Industry." P. 221-222. The Crews and Captains, Orders Under Which They Work, Kind of Men, Where Come From, Kind of Work, Pay.

Reports called for in order as arranged. Each child being held responsible for points on his study slip. Several pupils will have same slip. This group will be responsible to the class for a complete report of their investigations. Discussions will follow as the class contributions are made. The reports and discussions will be completed on second day fol-

lowed by the summary as follows: From our discussions what reasons can we give for the decline of the oyster output in the Chesapeake Bay? (This organization is the one in the mind of the teacher. Class organization must be made by them and will differ somewhat.)

I. Greater demand caused by
   1. Increased population.
   2. Packing industry.
   3. Refrigerator cars.

II. Constant and careless use of natural beds.
   1. Bad methods of gathering.
   2. Not culling at bed causes destruction of young.
   3. Gathering from beds which should rest.
   4. Gathering at wrong seasons.
   5. Robbing private beds so individuals do not care to grow oysters.

III. Cultivation of oysters not sufficient.

How may these difficulties be overcome?

(These references are distributed the first day as the others but the report and discussion of following points is held until the present.)

REFERENCE:

"The Oyster," Brook. Storage Ponds, p. 138. Need, Suitable Land, Expense, Oyster Planting, p. 139.

Collecting Spat. P. 119-122. Use of Shell, Use of Tiles, Shape, Coating, Francis Winslow's Exp., p. 122. P. 125-126. Conditions for Artificially Collecting Spat, Cleanliness of Body? Where Placed, Kind Used in Muddy Water, Connecticut Experiment, p. 129. Oyster Planting as Compared with Oyster Farming, p. 131, Oyster Farming—How, p. 114.

Necessity for Legislation and Control. P. 141-2. Close Natural Beds Not in Condition to Be Dredged, Protect the Individual.

Teacher's organization and summary after discussion.

I. By better laws and the enforcement of these.
   1. Beds must not be disturbed during breeding season.
   2. Better legislation as to farming and planting, larger farms, larger leases, better protection.
   3. Natural beds protected heavy dredging.

II. Storage ponds near packing houses.

III. Avoiding waste.

IV. Association of Oyster men for common help and protection.

V. Creating public sentiment as to need and care of industry.

Lumbering in New England.

Ethel Delzell.

REFERENCES: Chamberlain,— the Continents and Their People. Tarr and McMurry, New England Supplement.

TEXT: Tarr and McMurry.

MATERIALS: Set of pictures showing the method of lumbering in the New England States. Maps drawn on blackboard by two pupils, one showing location of forests in this region, the other showing streams on which are located the principal saw-mills and lumber centers.

AIM: To find out how lumbering is carried on in the New England States.

Teacher read—"At time of the landing of the Mayflower in 1620, most of the country was covered with forests. What had to be done before the settlers could plant crops? What were the homes of the early colonists made of? What would be one of the first products sent back to England? How many years have passed since the landing of the Mayflower? What do you think about the extent of forests in New England now?

Teacher read—"There are large tracts of land in northern Maine, New Hampshire and Vermont, as well as in parts of three southern States, that are still covered with timber. Standing on the summit of Mt. Katahdin, one sees only a wilderness of trees in all directions. The nearest cultivated land is twenty-five miles to the east, while the unbroken forest stretches much farther away to the north and west." Use map on board—showing location. Show children pictures of the forests in New England. How do you account for these forests—why is not all the land cultivated or used for towns and villages? (Review of surface features.)" Since there are still forests, what will be one of the industries? What do you think the men engaged in lumbering will do first? When will be the busy season for cutting? Why do you think the winter season?

Teacher tell—"Formerly the cutting was all done after the first snowfall, but now it commences in late summer, so that the logs will be ready to be moved when the first snow comes." What is the reason for the earlier cutting of the timber? Why will the logs be taken to the edge of streams? Why will they not be moved until after the first snowfall? What will the men do after the logs are taken to the edge of the streams? Teacher may have to tell here that the men bring supplies and prepare for the next season.

Show picture of men hauling logs to streams.

Teacher read—"When the snow melts in the spring the cutting is over and another busy season begins."

What will be done with the logs now? Who owns these logs? What will be done so that logs of different owners may be separated or told apart when they arrive at the sawmills? (If children are troubled here ask how the ranchers tell their cattle or horses apart in the roundup.) What can

be done when the stream of water is not sufficient to carry the logs down stream?

Teacher read—" * * * immense numbers of logs are floated or driven down stream, forming what the lumbermen call a log drive." What would the lumbermen do if a log got caught on a boulder or sand-bar? If he does not dislodge the log at once, what will happen to the other logs? When all the logs get caught the men call it a log-jam. What can log-drivers do to break the log-jams? What would they have to do if they cannot start the logs on with their poles? What do men do to clear the way when there is a lot of hard rock that cannot be moved? In extreme cases, what can log-drivers do? (Show pictures here of log-drivers and log-jams.) If you were in the lumber business, can you think of anything you would do to prevent a log from getting stuck in the first place? We find that is just what some of the large companies on the rivers have done—they have cleared away many of the boulders and sandbars against which the logs were often piled in jams. What will be the size of the gangs who accompany the logs? What will hinder the logs from going on down stream when they reach the sawmills? Who will then separate the logs? Where will the largest sawmills be located? Why? Use map on board, having children point to location of principal lumbering towns, as Augusta, Lewiston, Auburn, Bangor (and perhaps one or two others, depending on ability of class). Do you think you would like to be a lumberman? What are some of the hardships of the winter season? (What is the climate of New England? Review.) What sort of homes will there be in the lumber camp? Will the men want a short or long hour day? What will be the dangers of the spring season? How do the men keep the logs moving? How do they manage to stay on the logs? What are the dangers if

they fall into the water? Give reasons for this statement: "So many hardships are connected with lumbering that a lumberman is said to become an old man after a few years of service.".

Besides being used for lumber, of what other uses are the forests? The two important uses are, that forests prevent rainwater from running rapidly off the land, and the other use, making wood-pulp into paper. What danger do you see in the fact that large companies handle the lumber business? What can the government do to protect the forests? Teacher tell—"The government is setting aside large areas among the head-waters of the streams as forest reservations. What would this mean to the lumbering business?

An Introduction to the Study of the Southern States

Benjamin W. Daily.

APPROACH—Why did we decide to study the United States in parts rather than as a whole? The country is so large that sections must be quite different in physical features, climate and historical development. The people will differ in manners, customs and ideals. The products and industries will vary. What are some of the things that distinguished the New England states? The Middle Atlantic? Who decides how states are to be grouped? Then we may vary the grouping to suit our convenience. What would be some good bases for grouping? Mountain states; Mississippi River states; Great Lake states; Gulf of Mexico states; Atlantic states; Corn states; Cotton states.

One group of states generally studied as a unit is the Southern group. Find them in your text. How many are given there? What states might be added? Which subtracted? How might the whole group be broken up into smaller groups?

PROBLEM—Let us see if we can determine why these states may be considered as one section.

In what respects are these states alike? What answer can be obtained from the map as to location? They lie further south than the states previously studied. One reaches almost to the Tropic of Cancer. Many border on the Ocean or Gulf. What does this tell us about the climate? The industries? What products would you expect? Turn to the temperature and rainfall map and see to what extent we were correct.

Turn to the surface map. What reasons here for grouping these states together? Compare with New England as to surface. Study the coastline. Long, many islands, bays, sounds, projections or land. Are they sand or rock projections? How must they have formed? Would they be a help or hindrance?

How do these states compare in area with New England? In population? How do they compare with the Middle Atlantic group? "The area of these states is five times the area of the Northeastern States, but the population is only three millions more." What conclusions can be drawn? The population is less dense and must be scattered. Look up the list of the twenty-six largest cities of the United States. How many of them are in the South? Only three. Find them. Why has the South so few large cities? What must be the work of the mass of the people?

What are your conclusions about climate? industries? products? Determine from your texts if you were correct. What products are given? Cotton, tobacco, rice, fruit, corn, sugar, lumber, some coal and iron, fish, oysters. Where is each of these found in greatest abundance? Which are found in other states? Which nowhere else?

The differences in climate, physical features, products and industries would be sufficient to mark off this section for

separate study. What other differences? Why has this section been called the Solid South? What influence would you expect the Civil war and the common negro problem to have upon the feeling of those states toward each other?

Why Study the Southern Section of the United States?

Cyrus D. Mead and Matilda Von der Halben.

MATERIAL—Wall map showing southern section. Large railroad folders. L. & N., Q. & C., C. & O., N. & W. Chamber of Commerce Map: "Cincinnati the Center of Raw Materials."

Why should we study the Southern Section? Suppose these states should be taken away, what effect would it have on us? What reason have you for thinking that Cincinnati is well located for trade with these states?

1. *Railroads.*

Here is an L. & N. folder. What do the black lines mean? Why might this be called L. & N.? First built from Louisville to Nashville. Name, by their letters, other railroads which enter Cincinnati. Find these cities on the map. But other lines go out from Louisville and Nashville. What does this mean? Why was this extension necessary? What states does the L. & N. touch? List them on the board. One should come to wall map; others should follow maps at their seats. About what part of the southern section does this line as a whole cover? Half or third. Let us turn to the population table in the back of our geography and find how many people live in these states. You may write on the board the number of inhabitants in each state. Let us see how many people live in the whole southern section. From these black lines where would you expect to see the largest cities? Find some of the largest ones. Can you tell why they have grown to be so big? What have we been trying to find out?

What reason have we? Follow the same methods with other railroad maps.

2. *Rivers.*

In what other way is Cincinnati well located to trade with the South? Name the states the Ohio and Mississippi rivers touch. How many of these states that the rivers pass are touched by the railroads? Name several of the larger cities Cincinnati would be in touch with by river. What do these facts show you as to our city's location?

What two questions have we tried to answer? Tell how we answered the first; the second.

Cotton in the Southern Section.

Cyrus D. Mead and Matilda Von der Halben.

MATERIAL—Redway & Hinman, Natural Elementary Geography, Carpenter's Geographical Reader; Wall Maps, Relief maps, Political maps.

PROBLEM—Why should we study cotton production in the South?

What are the conditions in the South that make cotton growing possible? Turn to the cotton production map. What does the difference in shading mean? How much of the Southern Section grows cotton? Name the chief cotton producing states. The secondary producing states. The non-producing states. Why do we not see the shading further north? What then would you say was the first necessary condition for cotton growing? Warm temperature.

Notice the line around the Gulf of Mexico and Florida. Why do you suppose no cotton is raised there? Turn to the rainfall map. What reason does this map suggest? Too moist. Turn again to the cotton production maps. Why do you think the shading stops in western Texas? Not enough rain. What added condition for cotton growing?

What reason can you suggest for such a heavy production along the Mississippi? Overflow, rich, deep, fertile soil. What would you think as to the soil in other regions on this map? The third necessary condition for cotton raising is a very fertile soil. Name the three conditions which make cotton the biggest product of the South.

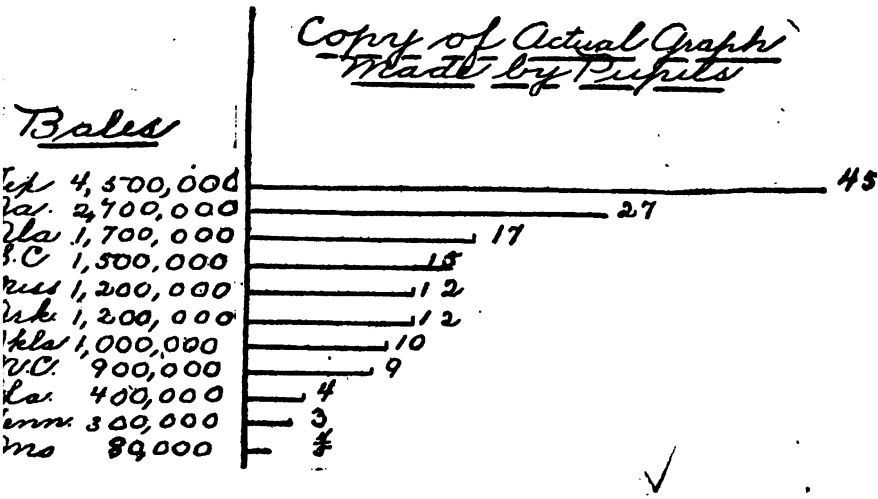
Why is the cotton crop so important? What are some of the uses of cotton? Let us turn to Carpenter's reader and see if it tells us any more. Put other uses on the board. Which of these uses of cotton do you think most important? Why?

Why should the transportation of cotton concern us? What has happened in Europe in the last few months that has affected cotton trade? (This plan was written in 1915.) What evidence did we have here in Cincinnati? "Buy a bale" movement. What would you think then as to the amount of cotton raised in Europe? Where in Europe would you think cotton could be raised? The United States produces four times times as much as Europe. Draw on the board two lines showing the relation between the crops of the United States and Europe. How would this trade be of importance to the South?

What are the reasons then for studying the cotton production of the South? It is its largest crop. Cotton is one of our most used products.

The class next represented graphically the production of cotton by bales in 1914. Figures were taken from a newspaper clipping. The work was presented as follows: the teacher placed the diagram on the board as it was worked out by herself and the pupils. The class decided on one inch as a unit of measure. Having agreed that one inch should represent 100,000 bales production, the class determined the length of line needed to show the number of bales produced

by each state. Thus a complete graph was worked out. Blank quadrille ruled paper was then given to each pupil on which to make his own graph. They decided to let one-half of each square on the paper represent 100,000 bales production. A copy of one of the pupil's graphs is given below:



Cotton: A Series of Lessons Taught to a Retarded Fifth Grade.

Katherine Keeler.

How many of you children know someone who works in clothing factories? What buildings in this neighborhood are occupied as such factories? The Pugh building, the Textile building, and six or seven other clothing factories were mentioned by the children. In the back of the telephone directory there are nearly two pages of firms in the whole-

sale clothing business. Turn in your geography to the paragraph naming the chief industries of Cincinnati. What does it say about the manufacture of clothing? What materials are most commonly used? Cotton, wool, linen. Which of these is most extensively used?

Let us see how cloth can be made from this raw material. Show the class a specimen of raw cotton.

Where does cotton come from? Here is a sample of raw cotton,—a cotton boll just as it was picked from the bush. Pass it about so that each one may examine it and feel the seeds imbedded in the cotton. Let us also study the pictures in our books. What does the first tell us of the size of the bush? The amount of cotton on each bush? From the second picture, how would you describe the appearance of a field of ripe cotton? How is the cotton picked? How carried from the field? What does the third picture show? Can you tell how the cotton is packed for shipping? What questions would you like to ask about cotton raising or the cotton business that would be interesting to study?

Probable questions as planned by the teacher.

Where is cotton raised, and why? How is it raised?
How do you get the seeds out and clean it?
How and where is it made into cloth?
What is done with the seeds?

Questions that were asked by the class.

Why must it be raised in a warm country?
How do you get the seeds out of the cotton?
How clean it?
Do they clean the cotton at the field?
Where do they manufacture cotton?
How do they make cotton thread?
When is cotton picked?
When is it planted?

Why do the people live so near the field?
How is the cloth made?
How is cottonseed oil made?
How is the cloth colored?
What is done with the seeds?
How is the cotton put into bales?
How is it planted?
Must it be irrigated?
How often is it picked?
How long does it take to grow?
Prices of bales, land, shipping.

Which question shall be answered first for the next lesson? Begin with planting the seed and study each step so (as one child said) as not to miss anything.

Lesson II.

Aim—We are going to find out today where and how cotton is raised.

Which part of our country produces much cotton? Let us turn to the maps to see. Name the states while I make a list of them on the board. Read to see which state leads. Could cotton be raised in Cincinnati? Read directions on our sample box for raising cotton here.

If cotton grows better in the South, what are the reasons? Do you mean that their hot summer days are warmer than our hottest days? What is the difference between our summers and theirs? What else is necessary besides long summers?

Let us read in our geographies to see how cotton is planted and how it grows. Class and teacher make the following outline as they read and discuss:

Planting.
Length of time to mature.

Blossoms.
Pods.
Cotton.
When picked?

SUMMARY—Tell what we have learned about where and how cotton is raised.

What is the next step after the cotton is picked? Pick a seed out by hand. What are the objections to doing it that way? What, then, is our question for tomorrow?

LESSON III.

AIM—stated by the class. We are going to find out how the seeds are removed from the cotton and of what use they are.

Who can suggest a good machine for removing the seeds? Here are descriptions of the cotton gin and the history of it. Read from Carpenter's North America, pages 122-123, also Beginning of American History. Feel one of the seeds that has been removed from the cotton. Rub it between your fingers. Squeeze it. What is left on your hand? What is probably made from the seed? Cottonseed oil. For what is it used? How is the oil obtained do you think? Cut a seed open and squeeze the juice. What will be left after the oil is extracted? The shell and pulp have uses. Read what our book says about that. Used for fodder and fertilizer.

Why do they take the trouble to use the seeds this way? How many seeds did you count in one boll of cotton? Estimate the quantity of seeds compared to the quantity of cotton. The bulk is almost as great. Tell what we have learned about removing the cotton seeds and their use. What is our question for tomorrow?

LESSON IV.

AIM—We are going to find out how cloth is made from cotton and where this work is done.

Examine this piece of cloth. Of what does it seem to be made? Which ways do the threads run. How is this done? What must we know first? How do you think the threads are made? Take a piece of raw cotton and see if you can separate some of the fibers from the mass. Compare these fibers with the size of a hair. How can these small fibers be made into threads large enough to weave with? Read in Carpenter's North America an explanation of the spinning and weaving, pages 123-124.

The largest cotton mills are in the East and South. What advantages have each of these localities for manufacturing and shipping? Where are the cotton mills in Cincinnati? We know that bales of raw cotton are bought and sold here. Who uses them and for what?

The class then made some field trips to confirm and extend their knowledge.

Sugar in the South.

Cyrus D. Mead and Matilda Von der Halben.

MATERIAL—Allen—Industrial Studies. Carpenter—How the World is Fed. Chamberlain—How We are Fed. Tarr & McMurry Texts. McMurry—Type Studies. Production Map and Railroad Folder.

1. *Problems of Consumption.*

We learned that cotton was an important product of the South. Today we are beginning the study of another southern product. What value might there be in studying about sugar? In how many ways is sugar used? How much sugar do you think is used per week in your home? The average is nearly a pound to a person. How does this com-

pare with the amount of coffee, salt, lard, spices, or butter each uses each week? What does this lead you to think as to the importance of sugar as a product? In 1915 the United States consumed nearly 8,627,000,000 pounds of sugar, an average of 86 lbs. per person. How does this compare with the weight of the boys and girls in the class?

What do we need to know to find the amount of sugar consumed in Cincinnati a year? The last census in Cincinnati gives about 400,000. The price of sugar now is 7 cents a pound. (1915.) How can we find what each person spends a year for sugar? How can we find how much Ohio spends a year for sugar? Find the population in the population table. How many dollars worth does Ohio consume a year?

How many people live in the United States? How much sugar will 92,000,000 people use in one year? what will it cost? (The following facts are added from data of 1917.) The consumption of sugar per capita before the war in the principal countries of Europe was: England, 78 lbs.; Denmark, 41 lbs.; Switzerland, 33 lbs.; France, 28 lbs., Holland, 28 lbs.; Germany, 24 lbs.; Norway, 22 lbs.; Sweden, 22 lbs.; Belgium, 21 lbs.; Portugal, 14 lbs. What is particularly interesting in these facts? Compare our consumption of sugar with these other countries. Why do you think the difference is so great? Why do you think a traveller found candy very expensive in France?

What has been the purpose of these problems? What interesting or valuable facts have we learned? Who would be interested to hear these facts!

2. *Kinds of Sugar.*

How many different kinds of sugar do you know? What plant produces each? Maple sugar comes from hard or sugar maple trees. The wood of this tree makes the "Bird's-eye" maple furniture. They are not the ordinary maple trees we

have around here. The hard sugar maple trees are found mostly in Vermont, and to a lesser degree in New York State, Pennsylvania, Ohio, and Indiana. Who can tell how we get the sugar from the maple trees? Tapping begins in the early spring. The process of tapping consists in boring holes, two inches deep, into the trees a short distance from the ground. Into these holes small spouts are slipped. A pail is then placed under the spout. During the day the sap trickles out, flowing more slowly at night when it is colder. If the weather is very cold the pails are left two or three days. The sap is collected in barrells and drawn on sleds to the camp. After a while we will learn what is done to it there.

Beet sugar is made from large white beets weighing from ten to fifteen pounds. Where would you expect these to be raised? Look it up in your sugar production map,—the sugar growing states of the temperate regions. What states would this include? "The principal beet sugar producing states are Colorado, California, Michigan, Utah, Idaho, Nebraska and Ohio."

3. *Regions of sugar cane production in the United States and climatic conditions necessary.*

Let us study next the conditions for growing cane sugar. Have some of the class come to the front and from the production map trace the chief states producing sugar cane, pointing out at the same time the states on the political map. What states would this include? Florida, Georgia, Alabama, Mississippi, Louisiana and Texas. What part of the South would we say this is? How do the states lie in relation to the Gulf of Mexico? Why do you think they are called the Gulf states? What temperature would you think necessary to grow sugar cane? Warm, steady climate and no frosts. Compare with Cincinnati. It grows best at a temperature of

about 80 degrees. Corn also requires a warm climate. We have over 80 degrees in Cincinnati at times. What else might be necessary and why? Why does not our winter affect the growing of corn? What is necessary to grow a new crop of corn? Replant. Sugar cane grows the year round for three or four years. What then is another necessary factor? No frosts.

Let us see what other conditions of climate are necessary. How could we find what rainfall is required in sugar growing? Turn to the rainfall map. What relations do you find between rainfall and the sugar producing region? Rainfall is heavy along the Gulf States. How does the rainfall compare with that of Cincinnati? Compare the amount in the Gulf States with the corn producing states. What then is the third necessary factor?

There is one other factor which you have already mentioned. What do you know about the soil in this region? Why is it called the delta section? How was it made? Give all the conditions under which sugar cane grows.

4. *Study of a Sugar Plantation.*

Let us assume that we are going to make a visit to the sugar growing section. Which would be the best state to visit? Louisiana, Delta Country. What routes could we follow to reach it? Trace route by water and rail. If we were going by the L. & N. what states would we cross? In what other way might we reach this section? What rivers? What states would we touch?

The plantation we are going to visit contains several thousand acres. The land is plowed and thrown into ridges from six to eight feet apart. How does this compare with the distance between corn rows. Corn rows three feet apart, sugar cane twice as far. Why are corn rows that far apart? Just enough space to allow a horse and cultivator to pass.

Why do we leave less space in our school garden? Small garden and cultivated by hand. Why would cane sugar be planted twice as far apart? More leaves and heavier foliage on the sugar cane. Put drawing on black board. A small trench is made in the top of each ridge, and in each trench two or three rows of cuttings from the main stalk are laid end to end. Formerly these cuttings were covered by hand, but now it is done by machinery. The expense of planting is very great because it takes from four to six tons of cane to plant one acre. How often does this planting have to be done? Soon the new shoots appear and the wavy green leaves grow rapidly under the southern sun. The cane reaches its full height, fifteen feet in eight months, and the flowers appear in ten months. The cane is harvested in October, because the sugar forms most rapidly in the latter part of its life, but it must be cut before cold weather. The stalks are cut very close to the ground. Why? Where is the bucket hung onto the maple tree? Low hanging buckets because the nearer to the ground the richer the sap. Most of the sugar is in the lower part of the cane. If most of the sugar is in the lower part what would need to be done to the leaves and tops?

The stalks are laid in piles and carried to the factory. How do you think the juice is obtained? Read in Carpenter "North America." From the bottom of page 160—"Our cars stop" to the bottom of page 161—"Other machinery." From what you know of maple sugar making how do you think the juice would be treated? The juice is carried by pipes to large screens and strained, then boiled in large tanks. What difference is there between crude sugar and that used on the breakfast table? Crude sugar is a brownish mass. What must be done to it? Refined. What kinds of refined sugar have we?

Granulated—The crystals are placed in a large drum which revolves until thoroughly dried in the right form.

Loaf—Crystals are pressed into molds, then dried and cut into the size desired.

Powdered—Ground to powder condition.

The crude and refined sugar, though they differ in looks very much, differ in price less than one cent a pound. Why would not every plantation have its own refinery? It is a very expensive process and is carried on only when in large quantities.

What city of the southern section is especially convenient for collecting and shipping? New Orleans. Why? Center of section, access by river and rail. Other great refining centers are New York, Brooklyn, Jersey City, Philadelphia, Boston, Baltimore, San Francisco. What would make these cities good centers for refining sugar? Seacoast; convenient for import and export.

5. *Summary.*

What do you regard the most interesting thing you have learned about sugar? In what ways has the study of sugar helped us in knowing the South?

The Piedmont and Manufacturing.

Helen Louise Stapleford and Lucille F. Sibbald.

We are going to determine whether or not the South has any natural advantages which might lead to its becoming a greater manufacturing center than it has been. What are some of the conditions necessary for manufacturing?

List on board as given:

Power.

Coal (steam).

Water (electricity).

Raw Material.
Markets.
Labor.
Transportation Facilities.

What part of the North is the most important manufacturing center? Then let us compare the northeastern section with the Piedmont section to see which has the better conditions for manufacturing. How can we find out about the coal in either of these two sections? Turn to the coal production map. How do they compare in this respect? New England has no coal; South has. How then does New England obtain power for manufacturing? Turn to the relief map. What does this show as to her water power? Has rivers; mountains near the sea, therefore rivers must be short and swift. Where is the water power in the southern section? Let us read our text on the "Fall line." Turn to the map. What rivers are there? What do these rivers show as to power? Flow directly from the mountains to sea, therefore good power. List some on the board.

Potomac	Savannah
James	Altamaha
Roanoke	Alabama
Cape Fear	Tombigbee
Peedee	

What is your conclusion as to power?

Which of these two sections has the advantage in the second point? What raw materials do you know that the South has and the North has not? Cotton, rice, sugar cane. Turn to your production maps and see how they compare in other products. List products of each. Check those which have more in one section that in the other. What is your conclusion as to raw materials?

What constitutes a good market? Great demand for products. What section has the advantage in this respect? New England. What proof does the population map offer?

How has the labor question affected manufacturing in each of these two sections? Slave help in the South. Skilled labor in the North. What effect do you think this has had? Turn to what our text says about this. What conclusion do you draw from that? Northeast formerly had the advantage but South has means of improvement.

How might transportation be carried on? What does the railroad map indicate as to land transportation? What does the text say? New England has the advantage. Look at your map of the United States and decide as to means of transportation by water. Read your text. Good natural advantages in the South and means of improvement.

What was our problem? What answer are you ready to give? There is good indication that the South may become a large manufacturing center since in two factors it excels the North, and in two, possibly three, there are possibilities of improvement.

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